The effect of attachment security on the infant sibling relationship following the birth of the second child

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Overview

Volume 1 of this Thesis is presented in three parts; The Literature Review, The Empirical Paper and The Critical Appraisal. Part one entitled "Parental influence on children's sibling relationships" draws from literature investigating a variety of aspects of parenting from differential parenting to marital discord as well as theories describing the impact of parenting on children's relationships. Methodology and cultural variations in the study of sibling relationships are also discussed. The studies are critically evaluated and the implications for future research and theory of parental influence are outlined. Part two is entitled "The effect of attachment security on infant sibling relationships following the birth of the second child." This empirical paper was a follow up to a UCL Thesis conducted by Victoria Hamilton and Zeyana Ramadhan in 2007. It involved 29 participants in a longitudinal design. The study looked at the older sibling's attachment to their mother in the last trimester of pregnancy and how this could influence later sibling relationships 5 months after the birth of a new sibling. Part three of the thesis, the Critical Appraisal, details some critical reflections on the research process with particular attention to study design, sampling and methodology.

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Part 1: Literature Review

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Part 1:Literature Review

Parental influence on children's sibling relationships

Abstract

This review examines studies on the impact of parenting on the development of children's sibling relationships. The studies link several parenting factors to sibling relationship development. The main findings are that differential parenting, marital discord and the expression of emotion through anger or depression can have an adverse impact on siblings. However, most of the research is primarily correlational and the causal factors involved in the nature of sibling interactions are both nuanced and complex. Researchers have used two main theoretical models, social learning theory and attachment to explain their findings. However, generalisability is weakened by a lack of diversity in the samples with white middle class participants predominant. More recent studies have examined bi-directional processes, the role of the wider system and the influence of a developmental psychopathology framework in understanding the nature of parental influence.

ability to resolve conflicts in a constructive manner and their social and emot understanding" (Volling & Blandon, 2003, p. 3)

Research has shown how a supportive sibling relationship can buffer against developmental outcomes while a difficult relationship may make a child vuln to psychological distress. Many studies have attempted to investigate factors influence the sibling relationship. The role of parents has been investigated frequently in an effort to evaluate whether there is an effect on siblings. The caregivers of the child provide their first bonds as outlined in Attachment Th (Sroufe & Fleeson, 1986) and model social relationships as evidenced in Soc Learning Theory (Bandura, 1977). They can both hinder or facilitate a suppo sibling relationship depending on the nature of their influence (Brody, 1998; 2000).

Previous reviews on the subject by Dunn (2000) and Brody (1998) cited man strands of influence on sibling relationships and the topic has provoked a sig amount of inquiry. It is important to determine how parents can impact on th children's relationships due to the role of siblings in our lives. Being able to determine the nature of caregiver influence could lead to interventions that p more supportive relationships between siblings. The present review addresse

specific research question: What is the nature and extent of parental influence on sibling relationships?

Method

The articles were searched through Psychinfo and Google Scholar and used the search terms "sibling relationships" and "parents." An initial search yielded a large number of articles and these were narrowed to those, which were specifically relevant to both sibling relationships and parental influence. This involved limiting the number of articles by looking at those in the last five years. Instead of returning to search databases, further studies were sourced through hand searching key journals such as the Journal of Child Psychology and Psychiatry, Child Development and Developmental Psychology. From the reference sections of studies further articles were located until significant themes developed. At times articles did not mention parental influence or sibling relationships specifically, but the articles clearly had relevance to processes underlying the research question.

The search found three reviews on the topic of sibling relationships however none of these focused primarily on parental influence (Brody, 1998; Dunn, 1983; Dunn, 2000). It was clear from the reviews though, that there were common themes underlying the studies into sibling relationships, which helped in structuring the search strategy.

The more recent articles were prioritised and consisted mainly of work within the last twenty years on sibling relationships. It was attempted to focus on sibling relationships among pre adolescent children, which has more relevance to

preventative interventions in parenting. Research contained a mixture of both longitudinal and cross sectional research designs with varying sample sizes and focused primarily on a white middle class population demographic. The review sourced a total of thirty articles on parental influence and sibling relationships.

Once the articles were collected and reviewed they were organised into significant themes. These themes form the basis for the paper and consist of different facets of parental influence: (1) differential parenting (2) marital discord (3) emotional regulation (4) family relationships and (5) contextual and theoretical factors such as cultural influence and attachment and social learning theory. Following a review of these bodies of literature the paper will summarise the methodological issues and limitations and provide recommendations for future research on the research question.

Differential parenting and sibling relationships

Differential parenting concerns certain siblings being treated more favourably by their parents. This inequity of treatment could be relevant to a variety of factors such as attention, discipline or even the role within the family. Parental Differential Treatment (PDT) has been linked to a variation in sibling relationship quality (Brody, 1998; Dunn, 1983). However, this variation has been shown to differ depending on what is explored. Researchers have looked at PDT in the context of conflictual relationships, adjustment, different family environments and the impact of a child's perception of unequal treatment (see Table 1).

Table 1.
Parental Differential Treatment

Study	N	Method	Age of children	Country	Sample	Family members	Focus of Interest	Result
Stocker, Dunn & Plomin (1989)	96	Videotaped play, home visit, interview, Questionnaires	Younger 37-39 mths Older 56-129 mths	USA	White, intact, middle class	Only the mother-sibling dyad	PDT and conflictual relationships	Maternal PDT* predicts sibling rel
Brody, Stoneman & McCoy (1992)	98	Videotaped home observations, computer games task, rating of temperament	Younger 4-9 yrs Older 6-11 yrs	USA	White, intact, middle class	Mother & Father involved	PDT and adjustment	Bidirectional interaction between negative emotionality and high PDT
McHale & Powetko (1992)	62	Home interviews with mother, older children, questionnaires, follow up phone calls and questions about activities, chores	Children aged between 8 and 14	USA	White, lower middle class, all but 2 families had 2 parents at home	Only the mother-sibling dyad	PDT in different family contexts	PDT is different in family contexts, e.g. disabled child, legitimacy?
Kramer & Baron (1995)	220	Questionnaire based feedback study	14mths – 5 yrs	USA	White, middle class	Both parents asked for feedback.	Assessment of parents to facilitate design of intervention programs	Outlines ways to help parents take steps to improve sib relationship
Kowell & Kramer (1997)	61	Interviews, questionnaires, hypothetical situations	Children 11-13 yrs, sibling 1.5-4 yrs younger, older	USA	White	Both parents	Child's perception of PDT	Influence of PDT dependent on child's perception
McHale et al (2000)	203	Interviews, standardised questionnaires, telephone interviews, 2 longitudinal studies	Middle childhood and adolescence	USA	White, working, middle class sample	Both parents	When does PDT have negative implications for siblings?	Fairness perception crucial to outcome in PDT
Richmond et al (2005)	136	Lab visit, both parents and children completed questionnaires and interviews on relationship and adjustment, longitudinal	Younger sibling 10.2-12.2-16.1 Older sibling 7.9-10-14	USA	Middle class, married. 80% white	Both parents	Changes in sib rel over time, role of PDT	Sibling context important with regard to influence of PDT

*PDT = Parental Differential Treatment

Early studies found links between differential parental behaviour and conflictual relationships, particularly influenced by the mother's behaviour (Stocker, Dunn & Plomin, 1989). The mother was found to often direct more affection and attention towards a younger sibling, and this could be a powerful predictor of the sibling relationship (Stocker et al., 1989). This was evident from a procedure, which included videotaped play, unstructured observation and a maternal interview (see Table 1). However the causal direction of sibling relationship development was still unclear and one could not say whether maternal behaviour influenced the sibling or vice versa.

Later research viewed parental influence in terms of differential treatment, as a more complex concept involving bi-directionality and a variety of variables. A 'dual process reciprocal influence model' defined exchanges as being influenced by both parental and child characteristics (Brody, Stoneman & McCoy, 1992). One of these variables was temperament. Brody et al. (1992) used a combination of a videotaped home observation and a computer games task as well as a rating of the child's temperament and involved both parents in the analysis. It was found that sibling's levels of emotionality had a significant influence on PDT e.g. highest PDT when the youngest child was rated as high in negative emotionality (Brody et al., 1992).

However, even this outcome was dependent on family processes and relative differences between the siblings in negative emotionality. Parental influence was clearly relevant but only as part of a wider system of interaction. In terms of direct influence, Brody et al. (1992) found paternal behaviour to have the most impact on

negative emotionality differences. This finding is interesting in the sense that many studies have focused on a sample of mothers when considering parental influence.

The notion of child adjustment and differential treatment is a complex concept e.g. a sibling can have negative feelings and behaviour towards the other but this may have a positive impact on the child's adjustment (Deater-Deckard, Dunn & Lussier, 2002). The broad concept of PDT was looked at in more detail by analysing different family contexts including those with disabled siblings.

Mchale and Powetko (1992) demonstrated how the impact of PDT is related to family context by looking at how a child reacted when a disabled sibling was treated differently. The study used older children (aged 8-14) and relied on interviews and questionnaires instead of naturalistic observation, which was different to the previous studies mentioned (McHale & Powetko, 1992). The emphasis on self-report, particularly with regard to issues like discipline, meant that the risk of bias has to be taken into account when interpreting the results.

Increased legitimacy of parental treatment and a child's perception of the fairness of their treatment meant that the same parental behaviour could have a different outcome in different contexts e.g. more discipline led to most positive reports from children with a disabled sibling and least positive in children without (McHale & Powetko, 1992). Therefore PDT is a concept that can have varying consequences for a child's functioning but it cannot be considered without an understanding of family context.

In considering the issue of legitimacy and fairness as a factor in how parental influence affects child functioning, it was important to look at children's perceptions of PDT. Informed by social information and attribution theories, studies examined how PDT and functioning were moderated by attributions (Kowell & Kramer, 1997). The outcome of some studies showed that PDT did not have an automatic negative effect and in 75% of cases children did not view the treatment as unfair (Kowell & Kramer, 1997). Even when it is obvious that PDT is present there can still be satisfactory sibling relationships. According to Kowell and Kramer (1997) it is the meaning and not the behaviour that is crucial to how PDT impacts on child functioning. Again, it is unclear in what direction the influence is and whether feedback from a child would allow for more understanding as to why PDT takes place. Also the study used primarily self-report measures and the sample was an older age group to the other PDT studies reviewed.

It is clear that it is quite common for PDT to take place but that it often does not have negative consequences for a child's relationship with their sibling. The issue of children's perceptions of fairness was further explored in an effort to discover on what occasions PDT did have negative implications for siblings (McHale, Updegraff, Jackson-Newsom, Tucker, & Crouter, 2000). The study involved a large sample in middle childhood and adolescence and was longitudinal in nature. By looking at fairness ratings and positivity in the sibling relationship, it was found that a perception of fairness in PDT was linked to positive regard for a sibling (McHale et al., 2000). However fairness alone did not guarantee positive functioning as there was an interaction between fairness and PDT that linked to lower self esteem (McHale et al., 2000). It was also found that a difference in parental warmth shown

to the child could have a negative influence on sibling positivity and self esteem. Again these results show a bi-directional influence between parent and child, which combine to create a well-adjusted or conflictual sibling relationship with context playing a key role.

While the studies mentioned up to now considered variable ways of investigating the broad concept of parental differential treatment, few considered the impact on child functioning over a longer-term period. How does PDT impact on sibling relationships over time? Richmond, Stocker & Rienks (2005) was a longitudinal study with three time points over six years and involved interviews and self-report measures rather than observations to assess changes in the sibling relationship (see Table 1).

It was found that a change in sibling context was associated with a difference in psychological adjustment (Richmond, Stocker & Rienks, 2005). However, it was consistent with a developmental psychopathology model in the sense that a child's context was dynamic and could have different effects at different developmental stages e.g. the concept of depressed mood and its link to sibling relationship quality could increase or decrease depending on the development of the sibling relationship.

This indicates that it is not only parental influence that can impact on children's adjustment over time. However, changes in PDT have been found to link to behavioural problems and externalising behaviours (Richmond et al., 2005). This raises the question of early intervention for externalising problems involving work with PDT and the sibling relationship. Some studies have begun to look at

interventions that facilitate parents in supporting positive sibling relationships (Kramer & Baron 1995).

Summary

In summary it is clear that while PDT does not always directly predict problems in sibling functioning it can in certain circumstances be linked to negative outcomes (Brody et al., 1992; Stocker et al., 1989). Outcome depends on the family context of the PDT, how a child perceives their treatment and the influence of adjustment and negative emotionality (Kowell & Kramer, 1997; Mchale & Powetko, 1992; Mchale et al., 2000; Richmond et al., 2005). The study of PDT has been critiqued for being largely correlational and the methodology amongst studies varied between naturalistic observation and self report methods (Dunn, 2000). In considering PDT and its influence in negative outcome, an association with marital discord provides another avenue for studying sibling adjustment (Brody, 1998).

Marital discord and sibling relationships

Marital discord has been shown to have an impact on under-controlled behaviour, particularly in boys, and to lead to a modelling of aggressive behaviour (Emery, 1982). Parental conflict can affect child functioning indirectly and directly, lead to inconsistent discipline, a cold unresponsive and angry parenting style and increased stress in children (Emery, 1982; Gottman & Katz, 1989). The effect of conflict in the home on children's peer relationships has also been shown to be significant. It can influence a child's ability to regulate their emotions and due to high stress they may find it difficult to maintain problem-free play (Gottman & Katz, 1989, Table 2).

Table 2.
Marital Discord Studies

Study	N	Method	Age of children	Country	Sample	Family members	Focus of Interest	Result
Gottman & Katz (1989)	56	Naturalistic observation, highly structured tasks, semi-structured interview and questionnaire	Children 4-5 yrs	USA	White intact families	Mother & Father involved	Marital satisfaction and children's peer interaction	Marital discord hinders child's dev social rel
McKinnon (1989)	96	20 min lab observation, questionnaires, 48 dyads from married, 48 from divorced families	Younger sibling 4.5-8 years Older Sibling 6.5-10 yrs	USA	White families, matched on mother's education	Father included?	Compare sib rel in married and divorced families	Family processes not just divorce, married status important
Hetherington (1989)	144	Results of 6 yr follow up to longitudinal study	Target child 4 yrs of age	USA	Educated, middle class, white parents	Both parents involved.	Effect of divorce and remarriage on child's adjustment	Interaction of numerous factors involved in sib rel, gender, parental management influential
Dunn, Deater-Deckard et al (1999)	3681	Completed questionnaires at repeated intervals	Older 7.3 yrs. Younger, 14 weeks before birth to 4 yrs	UK	White, structure resembling UK population	Both parents	Marital relations influence on sib rel	Marital relations can link to negativity in sib rel 4yrs on
Deater-Deckard et al (2002)	192	Parents, 8 yrs + children interviewed, Questionnaire measures adjustment, sib rel.	Mean age 9-98, child 1 was around 5 yrs old, child 2 was 9 yrs old.	UK	Varied socioec backgrounds, white	Both parents	Links family context and sib rel quality	No sig diff in sibling negativity, positivity between intact and stepfamilies
East & Khoo (2005)	227	Short interview and questionnaire	Older sibling 15-19 Younger 11-16 yrs	USA	152 Latino, 75 African American	Mothers and siblings	Long term impact of sib rel	Role of family and parenting in shaping sibling relationships

With regard to sibling relationships, studies looked at the effects on children of being in intact married or divorced families with particular focus on the importance of family processes i.e. the impact of the marital relationship, parent-child relationship and the effect on child functioning (McKinnon, 1989). The method involved both laboratory observation of the siblings (aged 4-10yrs) and maternal questionnaires from married and divorced families. It was found that to divide between divorced and intact families was to oversimplify the issue, with the crucial factor being how marital discord mediated the link between divorce and conflictual sibling interactions (McKinnon, 1989). This mediation could possibly be explained by a number of factors e.g. direct modelling of conflictual relations or indirect insensitive and punitive parenting. Therefore one should focus on the actual relationship quality and family process rather than purely marital status (McKinnon, 1989).

The nature of the sibling relationship is affected in different ways by parental conflict. In one sense marital discord could lead to PDT and increase sibling hostility and rivalry, in another children could support each other in order to cope with difficult circumstances (Hetherington, 1989). The Hetherington (1989) study consisted of a six-year follow-up longitudinal method looking at the effects of divorce on child adjustment. Siblings in stepfamilies and boys in divorced families were found to have more aggressive, coercive and less warm behaviours in sibling interactions (Hetherington, 1989).

In general, siblings in step families remained more disturbed, problems were gender specific with boys exhibiting behaviour problems, while girl's relationships could become enmeshed (Hetherington, 1989). The study showed that sibling rivalry and

aggression played a more crucial role than warmth and support in increasing externalising and decreasing prosocial behaviour in divorced and remarried families (Hetherington, 1989). The compensatory hypothesis only held true for older children where a positive sibling relationship could act as a buffer against distress but for younger children sibling relationships could not moderate the effects of family transition (Hetherington, 1989).

Dunn, Deater-Deckard, Pickering and Golding (1999) studied the effect of marital relations and conflict on children in another longitudinal analysis. Using questionnaires and a large sample of 3681, they considered the sibling relationship with regard to direct and indirect pathways of influence from the marital relationship over a 4-year period. It was found that marital relations could predict individual differences in the interaction from older to younger siblings; particularly with reference to lack of affection and hostility between partners (Dunn et al., 1999). The idea of a compensatory hypothesis was undermined because no link could be found between high marital hostility and positivity in siblings. Crucially because of the longitudinal nature of the data it could be said that the results could be causal i.e. identifying a clear contributory link between marital relations and difficult sibling interactions (Dunn et al., 1999). However, the authors still exhibited caution due to the possibility of a bi-directional basis for conflictual relationships.

Similar to the studies on parental differential treatment, marital discord research aimed to explore children's views of the sibling relationship in different family contexts (Deater-deckard et al., 2002). In contrast to other findings in the field no significant difference was found between siblings in negativity or positivity in intact

or stepfamilies when children and adults were interviewed and given questionnaires. However, the study was undermined by including unmarried cohabitating families leading to a large variation in sibling relationship quality (Deater-Deckard et al., 2002).

The outcome for children from stressful family backgrounds has been linked to adolescent substance use and sexual risk behaviours (East & Khoo, 2005). However, Brody (1998) outlined in a review of sibling relationships that marital distress does not have an impact on sibling relationship qualities unless parenting becomes hostile.

Summary

Marital unhappiness, conflict and less cohesive family emotional environments are associated with less positivity and more negativity in sibling interactions (Brody, 1998). Gender, the impact of parental management and family processes can mediate how negative an impact parental discord will have on siblings (Hetherington, 1989; McKinnon 1989). The main difficulty in analysing the results of studies in marital discord is the differing emphasis on family context, status or the nature of the actual marital relationship. Is the effect on children due to modelling or a more indirect influence of conflictual, unresponsive parenting and inconsistent discipline (Dunn, 2000)? It is clear negative emotionality has an effect (Dunn et al., 1999, Brody, 1998) so studies have attempted to look at both anger and depression in relation to children's emotional regulation and subsequently their sibling relationship.

Emotional regulation and sibling relationships

In looking at the processes underlying both parental differential treatment and marital discord, research has considered the concept of emotional regulation as a mediating factor to parental influence on sibling interactions e.g. marital relationship quality can have an impact by regulating sibling's jealousy and influencing their interaction (Volling, McElwain & Miller, 2002). A child's level of arousal through being exposed to hostile or depressed parenting can lead to a difficulty in regulating their emotions which in turn can impact negatively on the sibling relationship (Brody, 1998).

Hostility was found to have an effect on children as young as 1 year old who had an emotional reaction to observing other's angry interactions (Cummings, Zahn-Waxler & Radke-Yarrow, 1981). Also the more important the individual observed was to the child the more it impacted on their emotional security, particularly in conflict interactions (Cummings et al., 1981). However, the sample size of this study was small with only twenty-four participants (see Table 3). With regard to sibling behaviour, when siblings were exposed to adult conflict there were found to be gender differences in their reactions (Cummings, 1993). Positive affect increased among female siblings throughout observations of angry and resolution interactions while male siblings exhibited more prosocial behaviour in a resolution period (Cummings, 1993). Siblings were more prosocial when compared with a peer group indicating some support for the compensatory hypothesis in buffering against the stress of marital discord (Cummings, 1993).

Table 3.
Emotional Regulation Studies

Study	N	Method	Age of children	Country	Sample	Family members	Focus of Interest	Result
Cummings et al (1981)	24	Mother's reports of children's response to anger affection.	Aged 1-2 ½, 11 boys, 13 girls	USA	Intact, White, middle class families	Mother and child	Anger and Affection	Children effected by anger and affection
Rutter (1990)	-	Commentary on depression studies	-	UK	-	-	Effect of parental depression on children	Children of depressed parents show distortion in emotional responses
Cummings (1993)	?	Presented with simulations of friendly, angry and resolution between parents in play sessions	Younger sibling 2-5 yrs Older Sibling 5-7 yrs	USA	-	Both mother and father	Impact of anger on siblings emotion, behaviour	Gender differences in response to anger and resolution
Carson & Parke (1996)	41	Peer competency data from teacher, playroom observation	Target child 4-5 yrs of age	USA	37 white, 4 ethnic minorities, socio ec?	Both parents involved.	Affect in parent-child interaction and children's social dev	Father's influential in negative affect and social skills
Jacob & Johnson (1997)	141	A series of questionnaires, lab problem solving interaction tasks	Children 10-18 yrs.	USA	Intact white, middle class	Both parents	Parent-child interaction and child functioning	Depressed parent has impact on child relationships
Volling et al (2002)	60	Play observations in lab, questionnaire measures of emotion, sib rel	Younger child 12 mths Older 2-6 yrs old	EU, USA	Middle class, white	Both parents	Emotional regulation and jealousy between siblings	Found an effect
Eisenberg et al (2003)	214	Univ lab, questionnaires, children completed puzzle task, observed, longitudinal study	Mean age of children 73 months	EU, USA	Working and middle class families	Mothers and siblings, father?	Connection between maternal emotional expressivity and children's adjustment, social competence and regulation.	Maternal positive emotional expressivity linked to child's regulation

Depression can have an influence on sibling behaviour through both direct and indirect pathways. As well as being exposed to negative affect in a direct manner, sibling interaction may be affected indirectly through impaired parenting which is not as facilitative to social interaction (Rutter, 1990). As in previous studies in other areas, the notion of the role of modelling and bi-directionality comes into play when interpreting results of depression research (Rutter, 1990). It is unclear whether parental depression influences child behaviour or vice-versa.

Later studies attempted to look at the difference in parent-child interaction between depressed and non-depressed families (Jacob & Johnson, 1997). The impact of depression on the child (aged 10-18yrs) was assessed with a sample of 141 through questionnaires and interactive problem solving tasks. It was clear that communication patterns were affected leading to decreased positivity and affective expression and an impact on relationships even when the depressed parents had no direct interaction (Jacob & Johnson, 1997).

The complexity of parent child interactions were shown by results which considered father-child communication as a more important variable to the outcome of depression and was linked to later behavioural and externalising problems (Jacob & Johnson, 1997). The researchers explained such results in the context of a family systems model, as it appears to be an oversimplification to state that depression leads to sibling interaction problems without a consideration of family context.

The child's response to both hostility and depression can influence their development of emotional regulation skills. Problems in emotional regulation can in turn lead to

more conflicted social interactions and conduct problems relating to peers (Carson & Parke, 1996). Emotional Regulation was assessed through playroom observation and data from teachers (Carson & Parke, 1996). Similarly to Jacob & Johnson (1997), social skills in children are more affected by a father's response to their distress with negative affect than a mother's, particularly in relation to parent-child play (Carson & Parke, 1996). However, this sample consisted of much younger children (aged 4-5 yrs). When hostility and depression interferes with a child's ability to socialise emotional regulation skills through play, both sibling and peer interactions can be negatively influenced (Carson & Parke, 1996).

The notion of regulation was studied more specifically by Eisenberg et al. (2003). Their method involved a sample of 214 with a longitudinal analysis of younger children using laboratory observation, questionnaires and puzzle tasks. They focused on family context and children's development of emotional regulation skills. Bi-directional influences were considered with the emotional climate of the home, the child's reactivity and parental expression of emotion all interacting to affect relationships and socio-emotional competence (Eisenberg et al., 2003). Their findings support the idea of parental influence being central to a model of children's regulation and social functioning with maternal positive emotional expressivity related to children's regulation. With regard to negative expressivity, the age of the child must be considered as its impact to outcome changes with the age of child (Eisenberg et al., 2003).

Summary

Children can be affected by both the presence of anger and depression, which can have an influence on their emotions (Carson & Parke, 1996; Cummings et al., 1981; Cummings, 1993; Jacob & Johnson, 1997). When a child fails to regulate their emotions it subsequently interferes with their ability to relate with their sibling. The impact on a child however is mediated by gender, age, the role of the father in the child's care and maternal emotional expressivity (Eisenberg et al., 2003).

Relationship Quality and Siblings

Aside from the acquisition of emotional regulation skills, the quality of the parent child relationship has important implications for socialisation of the child (Howe & Ross, 1990; Volling & Belsky, 1992). It was found from observations in the home and a laboratory, that greater maternal involvement could impede the development of a sibling relationship, and particularly intense maternal involvement had a negative association with friendly sibling interaction (Howe & Ross, 1990; see Table 4). Maternal involvement was found to predict sibling conflict, with an association between mother-child conflict and sibling conflict present (Volling & Belsky, 1992). Father-child socialisation was more linked to sibling prosocial behaviour (Volling & Belsky, 1992). The quality of the parent-child relationship is important in the sense that once a child experiences non-supportive relationships it overrides the effect of other influences such as parental differential treatment (Volling & Belsky, 1992).

Table 4.
General Family Relationships

Study	N	Method	Age of children	Country	Sample	Family members	Focus of Interest	Result
Howe & Ross (1990)	32	Home observations, lab to assess preschool behaviour	First born 36-58 months, second born 14 months	-	White, middle class	Mother-sibling dyad	Maternal socialisation	Negative association intense maternal involvement & friendly sib rel.
Volling & Belsky (1992)	30	Longitudinal study, home observations of parent-child and sibling interaction, questionnaire measures	Firstborn mean age 72 months, second born 21 months.	USA	Intact white, middle and working class families	Both parents involved	Contribution of mother/father-child relationships to sib rel	Father effect, on prosocial behaviour
Brody et al (1994)	142	Videotaped interaction, questionnaire based measures, longitudinal study	Younger sibling 4-9 yrs Older Sibling 6-11 yrs	USA	Middle and upper middle class, white	Both mother and father	Family relationships and child temperament and sib rel	Father's role forecast sib rel quality from middle childhood to adolescence
Brody et al (1999)	85	Parental and child interview, 3 home visits	First born child 9-12yrs	USA	Economic cross section of African American families	Both Parents were involved	Family processes, supportive parenting and children's development self regulation	Self regulated youths led to more harmonious sibling relationships
Coldwell & Dunn (2005)	118	Parents and children given interviews and questionnaires.	Target child 4-6 yrs old with sibling 8 yrs or under	USA	2 parent families, mix of working, middle class, 92% mother, 96% fathers white	Both parents involved.	Parent-child relationship and later adjustment	Sib rel quality not entirely mediated by parent-child relationship

The role of fathers in terms of parent-child relationship quality was again emphasised in a larger scale study by Brody, Stoneman & McCoy (1994). In their longitudinal study using videotaped interaction and questionnaires it was found that the father-child relationship and differential behaviour could predict sibling relationship quality from middle childhood to adolescence (Brody et al., 1994). But sibling relationship quality was a constantly changing construct, which depended upon interaction with family context over time; this is consistent with a developmental psychopathology model (Brody et al., 1994).

In the case of child adjustment it was again found that the interaction of numerous relationships and not just the parent-child relationship influenced outcome. Therefore rather than outlining parental influence on sibling interactions, models should consider the bidirectional influence of family relationships (Coldwell & Dunn, 2005).

Summary

The outcome is mixed with regard to family relationship quality and sibling relationships. Some studies using questionnaire and interview have shown that sibling relationship quality is not entirely mediated by the parent-child relationship (Coldwell & Dunn, 2005). Others involving observation indicate a father effect on pro-social behaviour and forecasting sibling relationship quality (Brody et al., 1994; Volling & Belsky, 1992) while an intense maternal involvement has a negative association with sibling relationship development (Howe & Ross, 1990).

Theories of Parental Influence

The research on parental influence has often referred to two theoretical concepts; Attachment (Sroufe & Fleeson, 1986; Teti & Ablard, 1989) and Social Learning Theory (Bandura & Walters, 1963). Both attempt to explain how parental behaviour may impact on a child's functioning and the nature of their relationships. The sibling relationship is one that can be affected by the parent-child bond (Teti & Ablard, 1989; Teti, Sakin, Kucera, Corns & Das Eiden (1996) or the modelling of behaviour from both parents (Carson & Parke, 1996).

Attachment Theory

Attachment considers development as taking place as a result of interactions with the caregiver. The infant's personality is affected by the initial dyadic relationship whereby only interaction with the caregiver gives their behaviour meaning and generates expectations of relationships (Brody, 1998; Sroufe & Fleeson, 1986) This dyadic relationship leads to the formation of an internal working model in the child which can influence later relationships, their emotional regulation and expectations of responsiveness and support (Brody, 1998; Sroufe & Fleeson, 1986).

Self-regulation has been shown to play a role in a child's sibling relationships (Carson & Parke, 1996; Eisenberg et al., 2003; Volling et al., 2002). Anger and depression from the parent can negatively affect the parent-child bond and subsequently children's self-regulation. The child may not appropriately seek comfort and support when distressed. A positive parent child bond through attachment has been linked to prosocial behaviour (Thompson, 1999) and positive parent child relationships are hypothesised to contribute to the development of prosocial orientations among siblings (Sroufe & Fleeson, 1986).

It is clear then that the difference between secure and insecure attachment has important implications for the relationships a sibling might develop. More secure attachment is signified by an increased ability of the dyadic system of parent and child to manage arousal and facilitate environmental interaction (Sroufe & Fleeson, 1986). Attachment has been shown to predict behaviour 12-18 months later (Sroufe, 1979; cited in Sroufe & Fleeson, 1986). In observing children one can see securely attached children as more prosocial while anxious avoidant and anxious resistant children are more negative and incompetent in social relationships (Stroufe & Fleeson, 1986). One study found that when both children had an experience of a secure attachment relationship that the interaction was characterized by smoothness and reciprocity (Sroufe & Fleeson, 1986).

Attachment as a theory has important implications for early intervention with sibling relationships. If the first caregiver-child bond can be shown to have clear links to later child behaviour, effective assessment could prevent more serious externalising problems and family conflict as well as facilitating the development of more supportive family relations.

The impact of attachment on sibling relationships has been studied in an effort to illustrate the link between security of attachment and the nature of later sibling interaction (Teti & Ablard, 1989). Looking at the affective quality of the sibling interaction it was found that attachment could account for individual differences in the younger child's affective involvement while the older child's caregiving improved with security of attachment (Teti & Ablard, 1989). Further emphasising

the importance of secure attachment and emotional regulation, the infant reacted less negatively when attention turned to their sibling and felt less threatened when securely attached to the mother (Teti & Ablard, 1989). So, even at the earliest stage of development there is evidence of parental influence on the nature of sibling relationships.

The transition to siblinghood is a time when the older sibling may be vulnerable to reacting with feelings of jealousy and anxiety. Secure attachment has been shown to predict a better adjusted first-born child and in turn an impact on the nature of the sibling relationship (Teti et al., 1996).

The problem with attachment is similar to other avenues of enquiry into parental influence. Questions remain with regard to the causal nature of the attachment link to later relationships (Dunn, 2000). There is a lack of longitudinal research to demonstrate that the changes in a sibling relationship are maintained over time. Also what one defines as the attachment relationship may also be influenced more directly by parental differential treatment and marital discord.

Social Learning Theory

Social Learning Theory defines behaviour as being learned through observing others and that this forms a guide for future behaviour (Bandura, 1977). It focuses on the social element of learning and not purely reinforcement principles. Modelling of behaviour by a parent could lead to a child learning a similar behaviour which it could later implement in social relationships e.g. with a sibling (Patterson, 1984).

Children's peer oriented behaviour has been shown to be affected by social learning and modelling from as young as nine months old (Becker, 1977).

While attachment focused on the management of arousal and subsequently relationships through the parent-child bond, social learning theory states the child learns through observation, the many skills which they will use as a guide in interactions with others (Bandura, 1977). According to the theory, the nature of the sibling relationship could develop through the imitation of parental behaviour (Bandura, 1977).

Social learning has been used to explain the impact of conflict and negative affect in the home on the child (Carson & Parke, 1996; Emery, 1982). It was found that parental displays of negative affect had an effect on children through modelling. As mentioned earlier in the review of marital discord it has been found that children can imitate the hostile and aggressive behaviour of parents (Emery, 1982). Children could continue this pattern of negative affect into subsequent social situations (Carson & Parke, 1996). If a child brought negative affect into situations such as the sibling relationship this would result in a more unstable, negative relationship due to the parental behaviour being imitated by children. Studies of anger (Cummings et al., 1981) and depression (Jacob & Johnson, 1997) have further illustrated the process of modelling and its generalisation to sibling relationships.

Aside from the negative impact of modelling, parental positivity is associated with higher levels of affection and warmth in the sibling relationship (Brody, 1998).

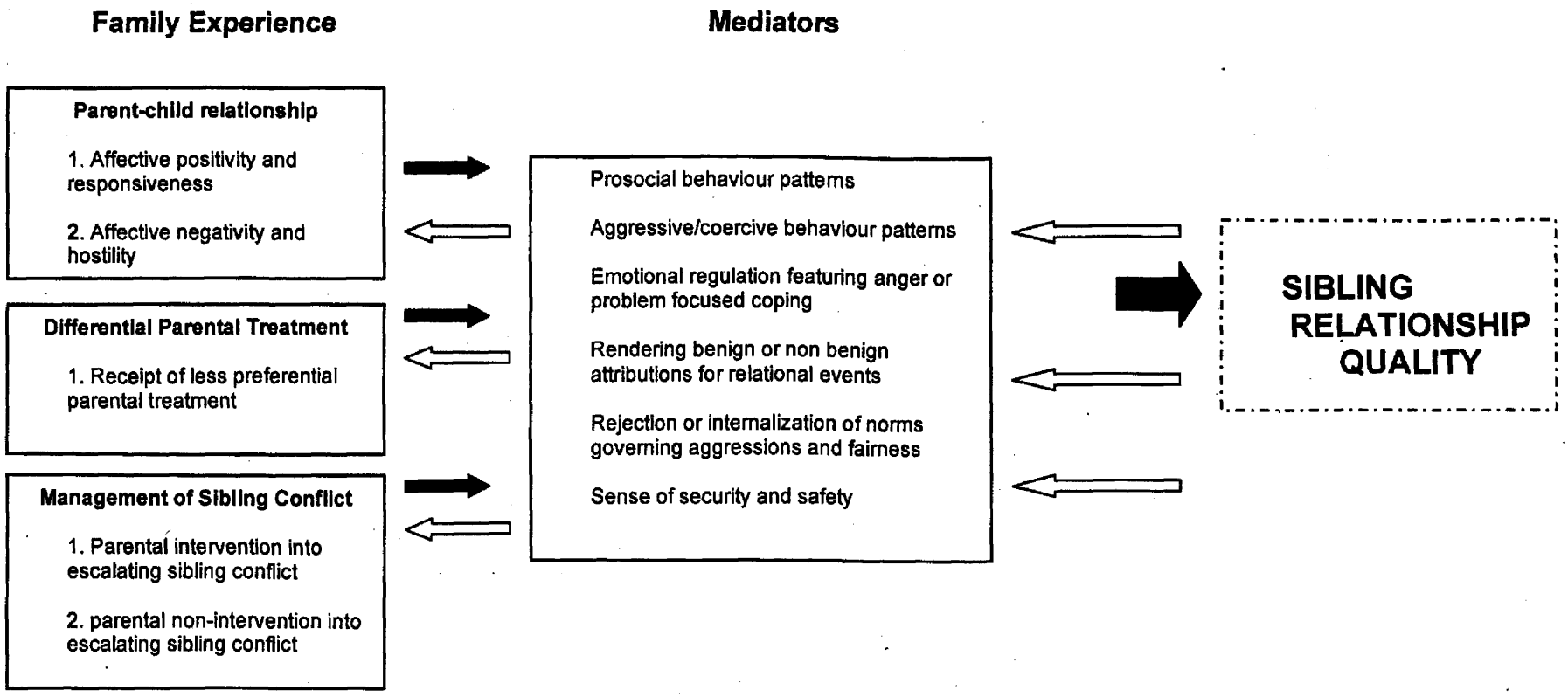
Positive parent-child relationships can increase sibling prosocial interaction and decreased conflictual sibling processes.

Social Learning Theory has been shown to account for many of the positive and negative outcomes in sibling relationships, particularly when looking at parental influence. The child is most exposed to the parent as a model for how to behave and it follows that this behaviour will, like attachment security, lead to an impact on others. In initiation of contact with a sibling, the child often utilises behaviour observed from the parent. However, familial contextual factors and the interrelationships of all in the family system may mean that behaviour modelled may be more complex than just a parent-child acquisition of skills. Psychosocial, cultural and contextual factors may impact on the child's behaviour as well as parental modelling.

A heuristic model of Parental influence and sibling relationships

More recent theoretical advances and models have taken into account the overall family system and bi-directionality in outlining the nature of parental influence on sibling relationships (Figure 1). Brody (1998) described his model as a theoretical framework for understanding variation in sibling relationship quality. It considered the parent-child relationship, differential parental treatment and management of sibling conflict as having an impact on sibling relationship quality. Instead of including marital discord, Brody's (1998) model took account of parental negativity and hostility, which were processes underlying parental conflict. These contributory factors were considered along with mediators of child temperament, emotional

Figure 1. **A broad representation of Brody's (1998) heuristic model of family experience and sibling relationships**



regulation and attribution styles. With regard to the causal processes in the development of the sibling relationship it allowed for the fact that relationships were bi-directional (Brody, 1998). This means that sibling relationships once initially developed can in turn influence parent-child relationships, differential treatment and parental management as well as mediators. Rather than a single causal pathway, Brody's (1998) model views sibling interaction as the product of a complex interaction of family experience, mediators and the sibling relationship itself.

Previous theories of Social Learning and Attachment both inform the model. Social learning is explained as a process that can link to sibling interactions i.e. through modelling and observation between parent and child or even through an indirect pathway of observing a parent and another; the child can acquire social skills necessary for interaction (Brody, 1998). These skills may produce positive or conflictual interaction depending on the nature of parental modelling.

Attachment is implicated through parental intervention in that responsiveness may aid the child in appropriate socialization skills (Brody, 1998). By the ability to regulate their own feelings they can feel secure and responsive towards their sibling and reduce emotions such as anger and depression.

Parental differential treatment was linked by Brody (1998) to the development of self-schema in the child that in turn could upset the sibling relationship. If a child felt they were not being treated equally they could project their insecurities onto their sibling resulting in conflict and aggression. Through a prolonged exposure to less preferential treatment the self worth of a child could decrease (Brody, 1998).

The role of parental attribution was shown in the model to be important in siblings' reaction to negative events. Responsive parenting led to more neutral interpretations of negative relational instances while hostile parenting was more likely to link to more negative attributions of such events. Similarly, parenting can have an impact on sibling norms i.e. how the children internalise models for behaving with each other. The likelihood of a better sibling relationship is enhanced by responsive parenting and an internalisation of norms (Brody, 1998).

Cultural Factors in sibling relationships

Most research into parental influence on sibling relationships has focused on white western families (see Tables 1-4). However, there are differences in the nature of parent-child, sibling-sibling relationships and family structure in non-western cultures (Brody, Stoneman, Smith & Gibson, 1999; Cicirelli, 1994; Dunn, 1983). Early studies found a higher frequency of sibling interaction in non western cultures (Whiting & Whiting, 1975) while in African society infants received a combination of nurturant, sociable and aggressive care from siblings which would most often be received by adults in western society (Dunn, 1983).

In a review of cross cultural differences in sibling relationships, Cicirelli (1994) detailed numerous discrepancies in social norms, extent of caretaking, responsibility and the obligatory nature of sibling interaction in other cultures. In the western world sibling relationships were more discretionary with the sibling taking care of a younger child so a parent could pursue other activities (Cicirelli, 1994). In a non-industrialised society like Kenya, older children take on more responsibility and help socialise and educate younger siblings, allowing parents to fulfil work roles and

ensure the family system's survival (Cicirelli, 1994). There is more control in society with regard to sibling relationships as it is essential that the sibling relationship works for both family and community survival. Western research studies have failed to take such factors into account and Cicirelli (1994) raised the question of whether western children could learn from the caretaking and socialisation evident in other cultures, particularly in relation to managing family breakdown and marital discord.

A recent study has attempted to tackle the lack of cross-cultural perspective in sibling relationship research by using a sample of African American families (Brody et al., 1999). Such a sample provided a different perspective due to more sibling-sibling care involved, so if a negative sibling relationship existed it would have a more detrimental impact on the family (Brody et al. 1999). It included extended families and studied the relationship of parental psychological functioning to sibling relationship context.

The study put forward the idea of a mediational model linking parental psychological functioning, family processes and sibling relationship quality (Brody et al., 1999). A positive association was found between parental psychological functioning and supportive parenting, both in the nuclear and extended family (Brody et al., 1999). Similar to white families, children who experienced problems with emotional regulation had more conflictual sibling relationships (Brody et al., 1999).

Brody et al. (1999) is one of the few studies to test theories and concepts of parental influence on siblings in different ethnic groups. Many studies have used a narrow definition of family structure that limits the applicability of any results outside white

middle class society. The impact of more collectivist cultures that involve the community and extended family, ties in with more recent ideas of sibling relationships that consider context and environment as well as direct parental effects. Instead of parental influence, the impact of primary caregiver effects is dependent on from whom the care giving is being received and time spent with a sibling. Until further research is replicated in cross-cultural situations the generalisability of results is severely limited.

Methodology

In attempting to draw tentative conclusions from the research on sibling relationships it is necessary to consider the methods used in the different studies e.g. the study design, the nature of the sample and family members involved (see Tables 1-4).

Design

One issue in research into parental influence is whether a study follows a longitudinal or cross sectional design. This is crucial with regard to assigning a causal relationship between parental influence and the quality of the sibling relationship (Dunn, 2000). A cross sectional design while providing useful correlation data cannot demonstrate a direct link between parental behaviour and the sibling interaction. This is clear in studies that demonstrated a link between parental differential treatment and conflictual relationships but acknowledged one may not cause the other (Stocker, Dunn & Plomin, 1989). A longitudinal study in marital discord however, showed that parental conflict could predict individual differences in the sibling relationship (Dunn et al., 1999). If the sibling relationship research is to

be of use in facilitating family interventions and identifying causal pathways it is necessary to increase the number of longitudinal studies.

Aside from whether a study is cross-sectional or longitudinal the method itself can have an influence on data obtained. Research on sibling relationships has used a mixture of interviews, standardised questionnaires and observation in both a laboratory and home setting. Interviewing has been used to get detailed feedback from parents on parental differential treatment (Kowell & Kramer, 1997; McHale et al., 2000; Richmond et al., 2005), marital discord (Gottman & Katz, 1989) and family relationships (Coldwell & Dunn, 2005). In some studies when children were old enough they could be interviewed on the same issues (Coldwell & Dunn, 2005; Deater-Deckard et al., 1999; McHale & Powetko, 1992; Richmond et al., 2005). There are weaknesses in interviewing with regard to the accuracy of self-report and social desirability that may undermine the data, particularly in topics such as marital discord.

Standardised questionnaires possess similar problems with regard to social desirability and self report but have been used in all of the studies reviewed. In spite of the limits, the use of questionnaires has enabled large sample sizes to be studied over long periods of time (Dunn et al., 1999). The difficulty in collating the data for review is the variety of questionnaire measures used. Take the idea of child perception of parental differential treatment (Kowell & Kramer, 1997; McHale et al., 2000). Both studies used questionnaire measures to get the child's interpretation of PDT. One used the Sibling Inventory of Differential Experience (Daniels & Plomin, 1985) while another used the Child's Report of Parental Behaviour Inventory

(Schafer, 1965). Because of the differing standardised measures, it restricts the generalisability of the data with parental differential treatment operationalised in different ways in different studies.

The advantage of observation of family interaction is that it can provide ecological validity in the representation of relationships. One can assess sibling relationships in the environment in which they naturally occur, thus increasing the likelihood of useful data. However there are differences in the nature of family observation in terms of setting and structured, unstructured observation. Some studies observed the siblings in a laboratory setting (Jacob &Johnson, 1997; McKinnon, 1989; Richmond et al., 2005) which although providing different data to self report measures may be restricted in terms of relevance to the home environment. On the other hand, videotaped home observations provided a naturalistic observation in the place where most family interaction normally occurs (Gottman & Katz, 1989; Stocker et al., 1989). However, whether observation is structured or in a naturalistic setting it can lead to a change in a family member's behaviour. Some researchers acknowledged that children might try to behave better towards their sibling when observed by an adult (Stocker et al., 1989).

Sample

The nature of the sample used in most studies is one that has been previously discussed in the cross-cultural section of this review. A lack of cultural diversity has implications for any conclusions drawn about parental influence and sibling relationships. All but a few studies were based on USA populations and within that the majority of the sample were white middle class. Only East & Khoo (2005) and

Brody et al. (1999) used a majority of Latino or African Americans in their study, while few considered working class populations (Deater-Deckard et al., 2002; Eisenberg et al., 2003; McHale et al., 2000; Volling & Belsky, 1992). This lack of diversity has implications for further investigation of sibling relationships. Any comprehensive model or intervention plan to facilitate better parental management of sibling relationships must allow for diversity. The time siblings stay together, their responsibilities towards each other and family system factors differ greatly between social class and ethnicity.

Age

The age range of children involved in each study can limit the generalisability of the data. Some studies involved children as young as 12months old (Volling et al., 2002) while others considered 19 year old children in their sample (East & Khoo, 2005). Age is relevant with regard to interpretation of outcome as children may experience different effects from parental influence at different developmental stages (Eisenberg et al., 2003; Richmond et al., 2005). If one were to consider a family process model of parental influence, the context around children would be very different at different ages. Studies with younger children however, presented more opportunities for early intervention in relationship problems.

Gender

The role of gender is one that affects results, both in terms of the relationship between siblings and the involvement of parents. Some studies have shown the reaction of siblings to parental negative emotionality can depend on their gender (Cummings, 1993) while the support between siblings in reaction to parental marital discord depends on the gender composition of the sibling pair (Hetherington, 1989). In most studies there were varying gender composition of sibling pairs which could be a mediator in the influence of parents on the sibling interaction.

Many studies focused on the mother-child relationship in their study (Howe & Ross, 1990; Eisenberg et al., 2003; McHale & Powetko, 1992; Stocker et al., 1989) While it is clear that the mother child relationship is often the closest the child will experience, the absence of fathers in some studies has meant what is termed parental influence often comes from studies which just considers maternal factors. Interestingly when fathers are considered there seems to be an effect on sibling behaviour. Studies found that fathers can affect prosocial behaviour between siblings (Volling & Belsky, 1992) and the role of the father can forecast sibling relationship quality from middle childhood to adolescence (Brody et al., 1994).

Discussion

The review aimed to summarise articles in an effort to investigate the nature and extent of parental influence on sibling relationships. It is clear that parents whether through marital discord, differential parental behaviour or the nature of the parent-child relationship, influence the sibling relationship in different ways. What complicates the picture is the number of mediating variables and interaction effects

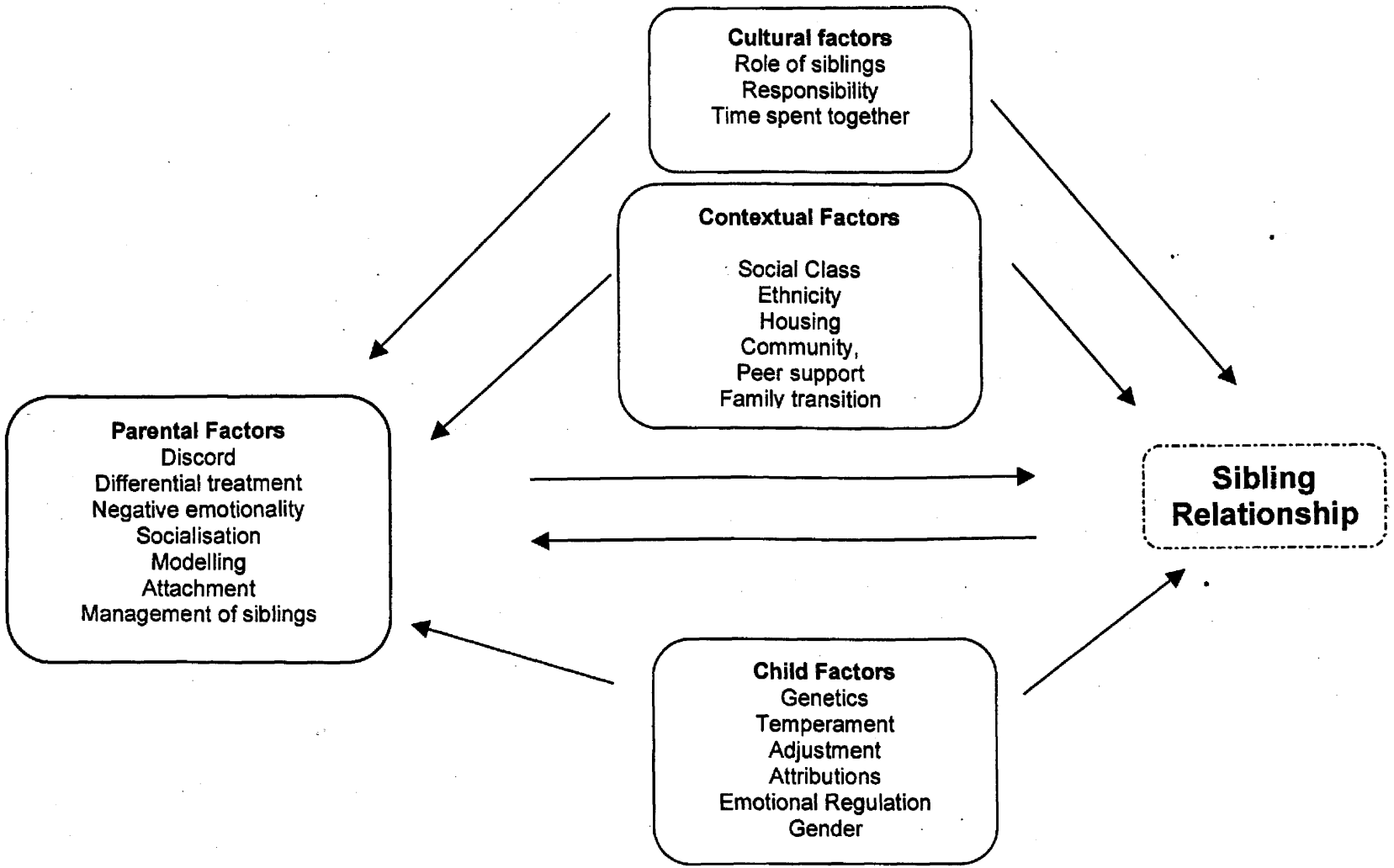
that prevent any firm conclusions being drawn. This is made more difficult by cultural factors, which differ in the definition of sibling relationships depending on the cultural perspective. A heuristic model by Brody (1998) outlined a summary of research to date on sibling relationships but still failed to account for the complexity of family processes. In an effort to draw some conclusions from the data it is worth considering a more recent model of the development of sibling interaction.

By studying the transition to siblinghood one can trace at the earliest stage the development of the sibling relationship. The Developmental Ecological Systems Model (Volling, 2005) attempts to situate the transition to siblinghood within an ecological context. This means that there are many factors that can impact on a child's development both inside and outside the family (Figure 2). This model broadens the scope from just parental influence.

Rather than factors such as parenting or the marital relationship in the micro system of the family it allows for the role of the wider environment and context (Volling, 2005). It also considers the bi-directional and multiple processes in the family and social systems that can impact in different ways on outcome. The model is closely tied to principles of developmental psychopathology in that many factors can impact on a child; these can change by age and over time and are the result of multiple intercorrelations (Volling, 2005).

It raises the gaps in the literature, i.e. studies of siblinghood outside white, middle class cultures, and poses questions to be answered by future longitudinal research that allows for a developmental psychopathological perspective of sibling

Figure 2. **A Developmental Psychopathology model of parental influence and sibling relationships**



relationships. In the long term, this kind of research would be more useful as it would explain how similar factors could impact in different ways and at different times in the child's development, depending on the context. Previous research has not focused on developmental trajectories and the changes in the environment as well as the individual (Volling, 2005). The sibling relationship is not a static concept and further study of the family over time may provide knowledge on interventions for sibling conflict when appropriate.

Of importance in studying parental influence on sibling relationships is the relevance to real world and clinical intervention. The idea that one could predict how a sibling relationship would develop has implications for both the family system and children's individual adjustment throughout the lifespan. The sibling relationship can be the longest an individual will experience in their life and the support of a positive sibling relationship can been shown to buffer against adverse risk factors such as marital discord or negative emotionality from parents (Dunn, 2000).

Parental influence cannot be discussed without acknowledging contextual factors such as the age, gender of the siblings, social class, and ethnicity e.g. the impact on outcome of parental influence differs with the age of the child (Eisenberg et al., 2003). Studies have developed increasingly complex methodology and longitudinal study designs but there is still great difficulty in establishing the direction of effects and causality of the parent on sibling interaction (Dunn, 2000). There are however, more and more studies taking context into account in sibling studies e.g. family context has been linked to differences in the development of children's emotional regulation (Eisenberg et al., 2003).

Richmond et al., (2005) found that the sibling relationship is continually changing and evolving leading to different outcome at different times. Such changes may develop into problems in the family and later internalising and externalising problems such as conduct disorder in the child. From the limited cross-cultural studies it can be seen that societal factors such as friends, peers and the community may also interact with both parents and the child to influence outcome (Brody et al., 1999).

It is only through further study of a variety of family contexts that the nature of parental influence can be further understood. For example Cicerelli (1994) found that the nature of sibling support and responsibility in other cultures could provide information on facilitating better family intervention in our own. Through drawing on Social Learning Theory and Attachment we can understand how a child may acquire a concept of relationships through their parents from an early age but this does not occur in isolation.

Although parental influence does not solely define the sibling relationship, it can be a point of contact for interventions in family problems. The main caregiver can, through directive and interactive intervention, facilitate better sibling relations (Brody, Stoneman & Mckinnon, 1986; Howe & Ross, 1990). This is particularly relevant to preschool children, where modelling and attachment processes can play a significant role in the development of the sibling interaction. When a parent uses non-punitive discipline with their children, siblings exhibit less antagonistic and more pro social behaviour (Brody et al., 1986). The communication to children of internal states is another that can influence siblings. A mother talking to the older

sibling about the younger's internal states is associated with more friendly sibling interaction (Howe & Ross, 1990).

Summary

There is more research needed in order to assess effectively the mediating link of family and developmental context in the influence of parenting on sibling relationships. The framework of developmental psychopathology may provide a template that matches more effectively to the continual changes in the family life cycle. However, the knowledge of Attachment and Social Learning Theory shows that there are clear processes, which can affect the child's ideas of relationships from an early age. This knowledge can facilitate assessment and amelioration of sibling relationship problems from infancy.

Research can promote positive techniques in developing prosocial sibling relations rather than interventions when negative sibling interaction is already taking place (Kramer & Baron, 1995). This could have an impact on externalising problems such as conduct disorder and later delinquent behaviour and enhance coping mechanisms and support networks. A full understanding of family dynamics can lead to the promotion of positive sibling relationships throughout the lifespan.

References

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioural change. *Psychology Review, 84,* 191-215

Becker, J.M.T. (1977). A learning analysis of the development of peer-oriented behaviour in nine-month-old infants. *Developmental Psychology, 13,* 481-491

Brody, G.H. (1998). Sibling relationship quality: Its causes and consequences. *Annual Review of Psychology, 49,*1-24

Brody, G.H., Stoneman, Z & McKinnon (1986). Contributions of maternal child rearing practices and play contexts to sibling interactions. *Journal Applied Developmental Psychology, 7,* 225-236

Brody, G.H., Stoneman, Z. & McCoy, J.K. (1992). Parental differential treatment of siblings and sibling differences in negative emotionality. *Journal of marriage and the family, 54,* 643-651

Brody, G.H., Stoneman, Z. & McCoy, J.K. (1994). Contributions of family relationships and child temperaments to longitudinal variations in sibling relationship quality and sibling relationship styles. *Journal of Family Psychology, 8,* 274-286

Brody, G.H., Stoneman, Z., Smith, T. & Gibson, N.M. (1999). Sibling relationships in rural African American families. *Journal of Marriage and the Family, 61,* 1046-1057

Carson, J.L. & Pare, R.D. (1996). Reciprocal negative affect in parent-child interactions and children's peer c competency. *Child Development, 67,* 2217-2226

Cicirelli, V.G. (1994). Sibling relationships in cross-cultural perspective. *Journal of Marriage and the Family, 56,* 7-20

Cummings, E.M., Zahn-Waxler, C., Radke-Yarrow, M. (1981). Young children's responses to expressions of anger and affection by others in the family. *Child Development, 52,* 1274-1282

Cummings, E.M., Smith, D. (1993). The impact of anger between adults on siblings' emotions and social behaviour. *Journal of Child Psychology and Psychiatry, 34, 1425*-1433

Daniels, D., Dunn, J., Furstenberg, F., & Plomin, R. (1985). Environmental differences within the family and adjustment differences within pairs of adolescent siblings. *Child Development, 56,* 764-774

Deater-Deckard, K., Dunn, J. & Lussier, G. (2002). Sibling relationships and social-emotional adjustment in different family contexts. *Social Development, 11, 4,* 571-590

Dunn, J., & Kendrick, C. (1980). The arrival of a sibling: Changes in patterns of interaction between mother and firstborn child. *Journal of Child Psychology and Psychiatry, 21,* 119-132

Dunn, J. & Kendrick, C. (1982). *Siblings: love, envy, and understanding.* Cambridge, MA: Harvard University Press.

Dunn, J. (1983). Sibling relationships in early childhood. *Child Development, 54,* 787-811

Dunn, J., Deater-Deckard K., Pickering, K. & Golding, J. (1999). Siblings, parents and partners: family relationships within a longitudinal community study. *Journal of Child Psychology and Psychiatry, 40,* 1025-1037

Dunn, J. (2000). State of the art: Siblings. *The Psychologist, 13,* 5

Dunn, J. (2005). Commentary: siblings and their families. *Journal of Family Psychology, 19,* 654-657

East, P.L. & Toon Khoo, S. (2005). Longitudinal pathways linking family factors and sibling relationship qualities to adolescent substance misuse and sexual risk behaviours. *Journal of Family Psychology, 19,* 571-580

Eisenberg, N., Valiente, C., Sheffield Morris, A., Fabes, R.A., Cumberland, A., Reiser, M., Thmpson Gershoff, E., Sheperd, S.A & Losoya, S. (2003). Longitudinal relations among parental emotional expressivity, children's regulation, and quality of socio-emotional functioning. *Developmental Psychology, 39,* 3-19

Emery, R.E. (1982). Interparental conflict and the children of discord and divorce. *Psychological Bulletin, 92,* 310-330

Gottman, J.M. & Katz, L.F. (1989). Effects of marital discord on young children's peer interaction and health. *Developmental Psychology, 25,* 373-381

Herrara, C.A & Dunn, J. (1997). Early experiences with family conflict: implications for arguments with a close friend. *Developmental Psychology, 33,* 869-881

Hetherington, E.M. (1989). Coping with family transitions: winners, losers and survivors. *Child Development, 60,* 1-14

Howe, N. & Ross, H.E. (1990). Socialization, perspective-taking, and the sibling relationship. *Developmental Psychology, 26,* 160-165

Howe, N. (1991). Sibling directed internal state language perspective taking and affective behaviour, *Child Development, 62,* 1503-1512

Jacob, T. & Johnson, S.L. (1997). Parent-child interaction among depressed fathers and mothers: impact on child functioning. *Journal of Family Psychology, 11,*391-409

Kowell, A. & Kramer, L. (1997). Children's understanding of parental differential treatment. *Child Development, 68,* 113-126

Kramer, L. & Baron, L.A. (1995). Parental perceptions of children's sibling relationships. *Family Relations, 44,* 95-103

Kramer, L. & Gottman, J.M. (1992). Becoming a sibling "with a little help from my friends." *Developmental psychology, 28 (4)* 685-699

Lamb, M.E. (1978). The development of sibling relationships in infancy: a short-term longitudinal study. *Child Development, 49,* 1189-1196

MacKinnon, C.E. (1989). An observational investigation of sibling interactions in married and divorced families. *Developmental Psychology, 25,* 36-44

McHale, S.M. & Pawletko, T.M. (1992). Differential treatment of siblings in two family contexts. *Child Development, 63,* 68-81

McHale, S.M. & Crouter, A.C. (1996). The family contexts of children's sibling relationships. *Advances in Applied Developmental Psychology, 10,* 173-195

McHale, S.M., Updegraff, K.A., Jackson-Newsom, J.J., Tucker, C.J. & Crouter, A.C. (2000). When does parents' differential treatment have negative implications for siblings? *Social Development, 9,* 149-171

Patterson, GR. (1984). A microsocial process: a view from the boundary. In *Boundary Areas in Psychology: Social and Developmental Psychology*, ed. JC Masters, KL Yarkin, 43-66. New York: Academic

Pike, A., Coldwell, J. & Dunn, J. (2005). Sibling relationships in early/middle childhood: links with individual adjustment. *Journal of Family Psychology, 19,* 523-532

Richmond, M.K., Stocker, C.M. & Rienks, S.L. (2005). Longitudinal associations between sibling relationship quality, parental differential treatment, and children's adjustment. *Journal of Family Psychology, 19,* 550-559

Rutter, M. (1990). Commentary: some focus and process considerations regarding effects of parental depression on children. *Developmental Psychology, 26,* 60-67

Schaffer, E. (1965). Children's reports of parental behaviour: An inventory. *Child Development, 346,* 417-424

Sroufe, L.A. (1979) The coherence of individual development. *American Psychologist, 34,* 834-841

Sroufe, L.A., & Fleeson, J. (1986). Attachment and the construction of relationships. In W.W. Hartup & Z. Rubin (Eds.), *Relationships and development* (51-72). Hillsdale, NJ: Lawrence Erlbaum Associates.

Stewart, R.B., Mobley, L.A., Tuyl, S., Salvador, M.A. (1987) The firstborn's adjustment to the birth of a sibling: a longitudinal assessment. *Child Development, 58,* 341-355

Stocker, C., Dunn, J. & Plomin R. (1989). Sibling relationships: links with child temperament, maternal behaviour, and family structure. *Child Development, 60,* 715-727

Teti, D.M. & Ablard, K.E. (1989). Security of attachment and infant-sibling relationships: A laboratory study. *Child development, 60,* 1519-1528

Teti, D.M., Sakin, W.S., Kucera, E., Corns, K.M., Das Eiden, R. (1996). And baby makes four: predictors of attachment security among preschool-age firstborns during the transition to siblinghood. *Child development, 67,* 579-596

Thompson, R. A. (1999). *Early attachment and later development.* In J. Cassidy & P. R. Shaver (Eds.), Handbook of attachment: theory, research, and clinical applications. p.265-286. New York: Guildford press.

Volling, B.L. & Belsky, J (1992). The contribution of mother-child and father-child relationships to the quality of sibling interaction: A longitudinal study. *Child Development, 63,* 1209-1222

Volling, B.L., McElwain N.L. & Miller, A.L. (2002) Emotion regulation in context: the jealousy complex between young siblings and its relations with child and family characteristics. *Child Development, 73,* 581-600

Volling, B.L. & Blandon, A.Y. (2003) Positive indicators of sibling relationship quality: psychometric analyses of the sibling inventory of behaviour (SIB). *Paper prepared*

for child trends' positive outcomes conference March 12-13

Volling, B.L. (2005). The transition to Siblinghood: A developmental ecological systems perspective and directions for future research. *Journal of Family Psychology, 19, 542-549*

Whiting, B.B. & Whiting, J. (1975). *Children of six cultures: A psychocultural anlaysis.* Cambridge, Mass: Harvard University Press.

Part 2:Empirical Paper

The effect of attachment security on infant sibling relationships following the birth of the second child

Abstract

Sibling relationships are often the longest lasting relationships and can affect socio-emotional understanding. Previous studies have shown that a firstborn child's secure attachment to its mother, can be predictive of a more positive interaction with their sibling. This study examined the link between attachment security and sibling relationships in the transition to siblinghood using 29 sibling pairs in a longitudinal design. It was hypothesised that the more securely attached the firstborn child, the more positive the relationship will be with their sibling. The more securely attached firstborn children in the last trimester of pregnancy were less likely to display hostility and competitiveness in the sibling relationship when the new sibling was 5 months old. Firstborn children also displayed a significant decrease in attention problems following the birth of their sibling. Age was related to the level of interaction between siblings and the mothers' perception of the firstborn child's adaptation to siblinghood.

Introduction

The arrival of a sibling is an important transitional period in the life of a firstborn child (Teti, Sakin, Kucera & Corns, 1996). It is a time when roles and interactions within the family are redefined (Stewart, 1990; Teti et al., 1996). The parent-child bond can be affected during a period in which the firstborn child experiences anxiety, anger and displacement (Levy, 1934; Winnicott, 1964). The firstborn child is so frequently upset at the arrival of a sibling that their challenging behaviour has often been viewed as normative, with observable negative reactions found in a majority of children under 3 years (Henchie, 1963; Winnicott, 1964).

Viewed from a systems perspective, the arrival of a new family member is a challenge for the entire system (Minuchin, 1985). The birth of a sibling can have an impact on the firstborn's developmental trajectory with a negative impact on self-perception and self esteem (Baydar, Hyle & Brooks-Gunn, 1997). Dunn and Kendrick (1980) found clinginess and whininess in the older child can increase the controlling interaction of a mother to their firstborn. Preschool age firstborns can also experience a significant decrease in maternal attachment security following the birth of a sibling (Teti et al., 1996).

The understanding of family relationships and the development of these over the lifespan can be enhanced by looking at the interaction of newly formed and previously established interactions in the transition to siblinghood (Teti et al., 1996). The older child's early reaction to the arrival of a sibling can determine the quality of

the infant sibling relationship at least in the short term and possibly throughout their pre-school years (Dunn & Kendrick, 1982; Teti et al., 1996).

Although the transition to siblinghood can involve stress for the older child, sibling relationships consist of many individuals' longest lasting relationships and can buffer against adverse developmental outcomes as well as increase vulnerability to psychological distress (Brody, 1998; Dunn, 2000). The relationship can facilitate socio-emotional understanding and conflict resolution as well as social competence with peers (Volling & Blandon, 2003). In the longer term, older siblings can increasingly affect care, with both parents often working, and have an important impact on emotional support to the younger sibling across the lifespan (McHale & Croufer, 1996).

The role of attachment has been investigated as a predictor for firstborn adjustment and sibling relationships following the birth of a sibling. Attachment has been linked to prosocial behaviour and positive parent child relationships are hypothesised to contribute to the development of prosocial orientations among siblings (Sroufe & Fleeson, 1986; Thompson, 1999). Individuals with secure attachment are more cooperative with their parents at 22 months and more affectionately positive and compliant at two years (Erikson, Sroufe & Egeland, 1985). The formation of a secure internal working model of relationships in the context of the infant-parent relationship may mean that a secure child will be more responsive towards a sibling and demonstrate fewer negative emotions such as anger and depression (Brody, 1998). Certainly attachment at 12-18 months can predict behaviour at age 4 ½ - 5

years so may be useful in predicting the trajectory of newly formed relationships in the transition to siblinghood (Erikson et al., 1985).

Pre-school children are able to serve as subsidiary attachment figures to their siblings (Stewart & Marvin, 1984), and qualitative differences in the partnership between the mother and older sibling are associated with the sibling attachment relationship (Ainsworth, 1978; Brody & Stoneman, 1986). Teti and Ablard (1989) found that a good relationship existed between infant and older sibling only when the older sibling was more securely attached to the mother. The development of the sibling relationship was best understood by the quality of the initial parent-child relationship rather than contextual factors such as age, family size or sex (Teti & Ablard 1989). Therefore the nature of the mother-firstborn child relationship is important in the reaction of the firstborn to a younger sibling's birth and later sibling rapport (Ainsworth et al., 1978).

In summary, previous studies have shown that for the firstborn the transition to siblinghood can be variable and attachment security may play a role in the formation and adjustment to a sibling relationship following the arrival of a new family member.

The current study looked at preschool age firstborn's adjustment to first time siblinghood through the observation of the sibling relationship. It tests the hypothesis that a higher quality sibling relationship will be associated with the security of the firstborn child's attachment to the mother, measured prior to the sibling's birth. It aimed to do this through a longitudinal design that followed the firstborn child at

three time points from the last trimester of pregnancy to 5 months after the birth of the new sibling. Both attachment security and the later sibling relationship were evaluated through naturalistic observation in the home environment (Gottman & Katz, 1989; Stocker et al., 1989).

Although previous studies have looked at sibling relationships and attachment security and attachment security change in the transition to siblinghood, no study has considered all factors together in the same research (Teti & Ablard, 1989; Teti et al., 1996). Teti and Ablard (1989) looked specifically at sibling relationships and attachment security in older children (2-8yrs of age) in a laboratory setting. While Teti et al. (1996) focused on attachment security in the transition to siblinghood, they did not have a specific measure of the sibling relationship. Follow-up in their longitudinal study was only 4-8 weeks following birth of the new child and looked at adjustment more than the sibling interaction. They again had a sample of firstborn children who were up to 5 yrs of age. The current study looked at attachment and the sibling relationship at an earlier stage to any other study and looked at the predictive nature of attachment security before birth of a sibling for later relationships outside of the mother-child interaction.

It is important to assess sibling relationships at an early stage where preventative interventions can have more of a positive impact on child development (Brody et al., 1986; Howe & Ross, 1990). The data may be able to provide more information on the nature of the early sibling relationship following initial adjustment to the arrival of the sibling. It is hoped that the results in the study can be used to improve the

understanding of the importance of parenting and attachment in a transitional period to siblinghood and the link between attachment security and later relationships.

Previous research has indicated that contextual factors may need to be taken into consideration in the reaction of the firstborn to becoming a sibling (Teti et al., 1996). The current study used questionnaire measures of child behaviour, temperament, the mother's psychiatric symptoms and demographic data in order to control for their effects and determine how much of an independent impact attachment security has on the sibling relationship.

The hypotheses were as follows:

1. When playing with their 5-month old sibling, more securely attached firstborn siblings would be more likely to exhibit caregiving, affiliative social interaction and less likely to display hostility or distress.

2. When observing their mother giving full attention to their younger sibling, more securely attached firstborn siblings would be less likely to cry/protest, distract and act aggressively.

3. Security of attachment will predict less behavioural changes in aggression, emotionally reactivity and attention seeking in the firstborn child five months after the birth of the new sibling.

Method

Participants

Forty-four mothers were initially recruited for Time 1 assessment (conducted for UCL theses by Hamilton, 2007 and Ramadhan, 2007) from an antenatal clinic at a London hospital. After explaining the purpose of the study, those who agreed to take part were given an information sheet (Appendix 1) and contacted by telephone within a week to arrange an appointment time for a home visit.

For inclusion in the study, women needed to be in the third trimester of pregnancy with their second or third child, and have another child within 21-33 months of age. The participants were required to have a sufficient command of English in order for them to complete the self-report questionnaire measures. Any participants who were deemed high risk by hospital staff or had a troubled pregnancy were excluded from the study.

Following completion of the Time 1 and Time 2 baseline assessments, participants were asked if they would be willing to take part in a follow-up. Those that agreed were sent a letter after the birth of their new baby explaining the purpose of the new study (Appendix 2). They were then telephoned to arrange an appointment time for a home visit. Of the 44 participants who participated from the beginning, 29 (66%) agreed to take part in the follow-up while 15 (34%) participants did not take part in the follow up study (Appendix 3). 5 had changed address and could not be contacted, 6 refused to take part in the follow-up and 4 did not respond to phone calls or letters.

Among families with three children, the middle child was chosen rather than the firstborn as it was assumed they had more access to the newborn, and the third child was outside the age range required for inclusion in the study. Four of the 29 families (14%) had 3 siblings with the third child not involved in the observation.

The younger children ranged in age from 5 to 9 months (M= 6.03 months, SD= 1.11) and older siblings ranged from 24 to 42 months (M= 33.22 months, SD= 5.79) with a mean age difference of 27.14 months, (SD=5.70). Of the firstborn children, 15 were male and 14 were female. Of the younger siblings, 18 were male and 11 were female. The final sample included 8 male older child- male toddler dyads, 7 male older child - female toddler dyads, 10 female older child – male toddler dyads and 4 female older child – female toddler dyads. Mothers ranged in age from 25 to 42 years (M=34.59 yrs, SD=3.46).

The researchers attempted to recruit an ethnically, socio-economically and culturally diverse sample of individuals in order facilitate an outcome that was applicable to the whole population. For the follow-up study the sample consisted mostly of white middle class families. 79% of the sample were UK/European, 10% were UK/Asian, 3% Irish, 3% South African and 3% American.

Ethics

For the follow-up component of the study an amended ethics form was submitted (Appendix 4) as ethics had been completed and approved for the original study before the commencement of recruitment and data collection. Charing Cross

Research Ethics Committee granted ethical approval for the amendment on the 19th March 2007.

Design

This longitudinal study was the follow-up component to a UCL thesis conducted by Hamilton (2007) and Ramadhan (2007) researching attachment and behaviour problems in the transition to siblinghood over 2 time points (Appendix 5).

The initial study

The initial study looked at the impact of the birth of a new sibling on a firstborn child. The *Time 1 assessment* was carried out during the last trimester of pregnancy in the family home. The researchers recorded a period of interaction between the mother and their firstborn children using a video recorder. This allowed them to rate both the quality of the child's attachment to their parent and the mother's parenting style. Questionnaire measures of child behaviour, parenting, parental mental health, family socio-economic status and child temperament were also administered.

The *Time 2 assessment* of the older sibling's behaviour problems was conducted by telephone following the birth of a new sibling. This consisted of the administration of a Child Behaviour Checklist questionnaire (Achenbach & Edelbrock, 1983) when the infant was one month old.

Follow-up study

The *Time 3 assessment* looked at sibling relationship behaviour five months after the birth of the new child and utilised the same sample. Episodes of interaction between

the siblings were recorded by videotape. This allowed ratings of the sibling relationship utilising a coding procedure based on the work of Teti and Ablard (1989). The follow-up study also took a further measure of the older sibling's behavioural problems, the infant's temperament and the mother's perception of the sibling interaction. The researcher of the follow-up study was blind to the attachment ratings of the earlier study.

Setting

A home visit was arranged to observe the sibling relationship. Each visit was conducted by the researcher at Time 3 and took place approximately 5 months after the birth of the new child.

Measures

The Attachment Q-Sort (AQS; Waters & Deane, 1985) assessed the first-born child's attachment to its mother before the birth of their sibling (Time 1). The AQS assesses the degree to which ninety descriptors are like or unlike the child's present behaviour in order to obtain a current picture of attachment security. Attachment security was rated using the AQS by assigning its items into categories using a fixed distribution (Waters, 1995). The researcher sorted the items into nine categories in terms of their salience to the child whose behaviour was being rated. Items that were more characteristic of the child were given high placement and less characteristic items were placed in the low categories. For example "child readily shares with mother or gets hold things if she asks to" or "child quickly greets his mother with a big smile when she enters the room." This measure has previously been used in studies that involved an assessment of attachment in the home environment (Teti et al., 1996). The AQS involves naturalistic observation and according to Cassidy and Shaver

(1999), yielded results ranging from .72 to .95 in studies of inter-rater reliability. In the follow-up, the scores from the AQS (Time 1) were looked at in relation to the sibling relationship between the firstborn and the infant (Time 3).

The Child Behaviour Checklist (Achenbach & Edelbrock, 1983)
is designed to assess a child's behavior and social competency across several syndrome scales, as reported by their parents and was used at Time 1, Time 2 and Time 3 assessment. The 100 items of behaviour making up the CBCL are categorised into seven syndrome scales labelled 'Aggressive Behaviour' 'Anxious Depressed', 'Somatic Complaints' 'Withdrawn', 'Sleep Problems', 'Emotionally Reactive' and 'Other Problems.' Examples of the items include "feelings are easily hurt" and "demands must be met immediately." The response scale consists of 0 for not true, 1 for somewhat or sometimes true and 2 for very true or often true.

The CBCL has high reliability with a mean test-retest correlation co-efficient across all scales of .85 (Achenbach & Rescorla, 2000). The initial study got a measure of changes in the older child's behaviour at Time 1 and Time 2 following the birth of the sibling. It was administered again to measure changes in the older child's behaviour at Time 3. The CBCL had good internal consistency, with a Cronbach alpha reported of .93 in the present study

The Infant Characteristics Questionnaire (Bates, Freeland & Lounsbury, 1979) was administered in order to consider whether temperament was a mediating factor between attachment and the sibling relationship. It was developed as a short screening device for difficultness. It contains 24 items rated on seven-point scales

e.g. "How easy or difficult is it for you to calm or soothe your baby when he/she is upset." The rating of 1 denotes an optimal temperamental trait and 7 a difficult temperament. The Infant Characteristics Questionnaire had a Cronbach alpha of .82 in the present study.

Observation of the sibling relationship (Teti & Ablard, 1989). The monitoring of sibling interaction required an observational paradigm due to the obstacles in the use of self-reports and interview data with infants and preschoolers (Dunn & Kendrick, 1982). Unfortunately there is no widely used measure of sibling relationship quality, particularly in early sibling relationship interaction (Volling & Blandon, 2003). Therefore for the purposes of the study the sibling relationship measure was developed from various sources. It involved (i) an observational coding of videotaped interactions and (ii) mothers' ratings of the quality of the sibling relationship as assessed by their responses to a questionnaire.

The observation of the sibling relationship used two episodes derived from Teti and Ablard (1989). Their study also looked at attachment and sibling relationships but the measure was slightly altered for use in a naturalistic rather than a lab-based setting. The present study was more concerned with the behaviour of the firstborn child, which meant certain episodes were irrelevant to the purpose of this research. Therefore a two-episode rather than seven-episode procedure was used.

Both episodes were videotaped and were 10 minutes in length. The *first episode* assessed sibling play in the mother's absence. Due to the young age of both siblings it was thought that the mother had to guide the children at times to enable an

interaction to take place. This first episode was recorded using an interval sampling technique every 30 seconds (Appendix 6) (Teti & Ablard, 1989). The following behaviours were coded during each 30 second episode: (1) *Caregiving* – older sibling to younger sibling including verbal assurances, holding kissing, caressing infant to provide comfort, attempts to calm infant be redirecting attention (2) *Infant attachment behaviours* – Greet, approach, embrace, directed by a distressed infant to provide comfort (3) *Affiliative social interaction* – non distressed social bids to each other (4) *Hostility* – hostile behaviour directed from one child to the other e.g. hitting, mocking (5) *Distress* – fussing, crying (Teti & Ablard, 1989). A further category (6) *No Interaction* was added due to the young age of the children leading to periods of inactivity.

The *second episode* looked at whether the firstborn child interfered with the mother's play with the other child. In this episode mothers are asked to play with only the younger child while directing the older child to play alone (Teti & Ablard, 1989). The task elicits feelings of rivalry between children. The coding system again consisted of interval sampling and behaviours coded were: (1) *Cry/Protest* – fussing, crying (2) *Distract* – any behaviour, such as calling or physically placing oneself between mother and child, that served to distract the mother's attention (3) *Aggress toward sibling and aggress toward mother* –hostile behaviours directed toward the child with whom the mother is playing or toward the mother herself (e.g. striking, yanking). Another category (4*) Sibling not involved* was added to account for occasions when the older child kept themselves occupied and did not react to the mother-infant interaction.

Sibling behaviour was coded by the author. Inter-rater reliability on infant-sibling behavioural coding was completed between the author and another psychologist. They coded six randomly selected sibling dyads (21% of the full sample). Inter-rater correlation for episode 1 was 0.75 and episode 2 was 0.79.

The Modified Maternal Interview of Sibling Relationships (Stocker, Dunn & Plomin, 1989). This questionnaire assessed children's sibling relationships in the toddler and preschool years. It was modified to be relevant to the ages of the children concerned. The items referred to dimensions of the sibling relationship and sibling's behaviour towards each other, from companionship and caretaking to jealousy and quarrelling e.g. "What happens if the younger sibling is hurt or upset? Does the older sibling show concern and comfort him/her?" Responses range from 0 (almost never show concern at the other's distress) to 5 (regularly shows concern nearly all the time it happens). Because the younger sibling was more passive in the interaction due to their age, the questionnaire was modified to mainly consider the older sibling's role in the interaction. Items that took account of a two-way interaction were omitted, as the infant was too young to initiate any interaction.

The Cronbach's alpha for the modified questionnaire was only .32 indicating a low internal consistency when both positive and negative scales were considered together. Therefore the questionnaire was considered in two different parts similar to Stocker, Dunn and Plomin (1989); (1) the 7 items describing positive behaviour (Cronbach's alpha .80) and (2) 4 items describing negative behaviour (Cronbach's alpha .80). One item on neutral behaviour was dropped from the analysis.

Maternal Appraisal questionnaire. This was a five-item questionnaire devised for the follow up study. It consisted of broad questions on the mother's perspective of their older child's adaptation to siblinghood. It consisted of a 5-point scale looking at issues such as "How the older sibling feels about having a sibling?" Responses range from 1 (finding it difficult all the time) to 5 (almost all the time happy). The Maternal appraisal scale had good internal consistency, with a Cronbach alpha of .86.

Power Analysis

The power calculation was derived from Teti and Ablard (1989), which looked at the relationship between attachment and sibling relationships. In looking at the link between caregiving and attachment with a regression analysis, to detect an effect size for an R squared of 0.34, a sample size of 29 was needed at p=.05 to have 80% power; assuming 3 covariates e.g. age, gender and socio-economic status. This study also predicted an association between sibling competition and attachment. To detect an effect size for an R squared of 0.31 a sample size of 29 was needed at p=.05 and to have 80% power. This was calculated using statistical software Zumastat.

Results

Preliminary Analyses

Of the 29 participants in the follow-up, the proportion of secure to insecure target children in the sample as determined by the .3 AQS security rating cut off was 83% (N=24) classified as secure and 17% (N=5) as insecure. There were slightly higher proportions of secure to insecure children in the current sample as compared with those found in middle class samples (typically 70% secure and 30% insecure, Waters 1995). There was no significant association between security scores and age ($r = -0.217$, $P=0.259$) and no significant difference in security scores with regard to the gender of the older sibling ($F(1,27)=0.006$, $P=0.937$) and numbers of children in the family ($F(1,27)=2.78$, $P=0.107$).

Due to 15 of the 44 participants dropping out of the study before follow-up it was important to determine whether there was a significant difference between the two populations. There was no significant difference between the age of mothers between the drop-out and the follow-up group ($F(1,43)=1.28$, $P=0.264$) and ages of older firstborn children ($F(1,43)=0.42$, $P=0.521$). The gender and ethnicity composition of the sample was similar for both the drop-out and follow-up group. There was no difference between the groups on questionnaire scores and attachment Q-sort ratings (Table 1).

Table 1

Mean scores at Time 1 for participants who dropped out and those who participated in the follow up

	Drop out		Follow up				
	M	SD	M	SD	t	df	p
Brief Symptom Inventory	23.14	22.54	12.97	9.36	1.62	42	0.125
Security of attachment - AQS criterion scores	0.48	0.23	0.55	0.24	0.91	43	0.370
Sum of satisfaction + number of people	9.50	1.56	9.74	2.68	0.31	39	0.759
Total Score CBCL time point 1	25.07	13.79	24.41	15.12	0.14	40	0.890
Total score CBCL time point 2	36.78	17.54	27.86	18.18	1.24	28	0.224

Time 3 observation: first episode

It was hypothesised that when playing with their sibling, more securely attached firstborn children would be more likely to exhibit caregiving, affiliative social interaction and less likely to display hostility or distress. As a percentage of the overall observation, caregiving occurred in 11%, affiliative social interaction 36%, hostility 4% and no interaction between siblings 48% of 30-second intervals.

The relationship between attachment security (as measured by the AQS at Time 1 assessment) and sibling interaction (as measured by an interval sampling coding method at follow-up) was investigated for the first episode (Table 2). There was a negative correlation between hostility and attachment security ($r=-0.417$, $p=0.024$).

This indicates that securely attached firstborn children were less likely to display hostility when playing with their sibling. There was an interesting trend between caregiving and attachment security however this did not reach strict significance (r=0.363, p=0.053).

Table 2

Correlations between attachment security and episode 1 observation scores

Observational Category	Pearson's r	p
Caregiving	0.36	0.053
Affiliative Social Interaction	-0.26	0.176
Hostility	-0.42	0.024
Distress	0.15	0.429
No Interaction	0.13	0.493

Time 3 observation: second episode

When observing their mother giving full attention to their younger sibling, it was hypothesised that more securely attached firstborn siblings would be less likely to cry/protest, distract, act aggressively and more likely to play by themselves. As a percentage of the overall observation, crying/protest occurred in 3%, distract 60%, aggression 4% and sibling not involved in 33% of 30 second intervals.

The relationship between attachment security (as measured by the AQS at time 1 assessment) and sibling rivalry and jealousy (as measured by an interval sampling coding method at follow up) was investigated for the second observation task (Table

3). There was a negative correlation between distract and attachment security (r=-0.497, p=0.006) and a positive correlation between sibling non-involvement and attachment security (r=0.435, p=0.018). A high score on the distract item indicated more attention seeking and jealous behaviour on the part of the older sibling. Therefore, secure attachment was associated with less competition by the firstborn child for their mother's attention and an increased likelihood that they would be content to play by themselves.

Table 3

Correlations between attachment security ratings and episode 2 observation scores

Observational Category	Pearson's r	p
Crying/Protest	0.29	0.120
Distract	-0.50	0.006
Aggress towards mother/sibling	-0.06	0.770
Sibling not involved with mother/infant	0.43	0.018

On looking at the significant correlations from the first and second episodes, attachment security predicted both distracting behaviour and sibling non-involvement when the variance due to infant temperament, mother psychiatric symptoms and social support was accounted for (Tables 4,5).

Table 4

Regression model showing predictors for distracting behaviour by firstborn child

	R^2	F	ß	t	p	ΔR^2	ΔF (p)
Model 1: variables	0.030	0.220	-	-	0.881	-	-
Infant Temperament	-	-	0.058	0.266	0.793	-	-
Brief Symptom Inventory	-	-	-0.012	-0.053	0.958	-	-
Social Support	-	-	0.157	0.717	0.481	-	-
Model 2: complete model	0.265	1.806	-	-	0.020	0.235	6.394
Security of Attachment	-	-	-0.493	-2.529	0.020	-	-
Infant temperament	-	-	0.021	0.107	0.916	-	-
Brief Symptom Inventory	-	-	-0.095	-0.481	0.636	-	-
Social support	-	-	0.121	0.618	0.543	-	-

Note: Model 1 *df*= (3,21), Model 2 *df*= (4,20)

Table 5

Regression model showing predictors for firstborn child not being involved with mother or younger sibling

	R^2	F	ß	t	p	ΔR^2	ΔF (p)
Model 1: variables	0.044	0.326	-	-	0.807	-	-
Infant Characteristics Questionnair e	-	-	-0.063	-0.294	0.772	-	-
Brief Symptom Inventory	-	-	0.032	0.148	0.884	-	-
Social Support	-	-	-0.187	-0.861	0.399	-	-
Model 2: complete model	0.225	1.453	-	-	0.043	0.181	4.664
Security of Attachment	-	-	0.432	2.160	0.043	-	-
Infant Characteristics Questionnaire	-	-	-0.031	-0.155	0.878	-	-
Brief Symptom Inventory	-	-	0.105	0.518	0.610	-	-
Social support	-	-	-0.155	-0.773	0.448	-	-

Note: Model 1 *df*= (3,21), Model 2 *df*= (4,20)

Further analyses revealed a positive correlation between the age of the firstborn child at follow-up and the level of distracting behaviour in episode 2 (r=0.504, p=0.007) and affiliative interaction in episode 1 (r=0.564, p=0.002). There was a negative correlation between the age of the firstborn child at follow up and a lack of

interaction between siblings in the first episode (r=-0.428, p=0.026). This indicated that interaction between siblings and competition for their mother's attention was more likely when the firstborn child was older.

When the age of the older child was controlled for, a positive association remained between attachment security and sibling non-involvement (r=0.404, p=0.033), and a negative association between attachment security, hostility (r=-0.574, p=0.001) and distracting behaviour (r=-0.458, p=0.014).

Attachment security and behavioural change

It was hypothesised that security of attachment would predict less increases in aggression, emotionally reactivity and attention seeking in the firstborn child five months after the birth of the new sibling.

Because the child behaviour checklist was administered over three time points an initial analysis was conducted to compare means in order to assess whether the firstborn child's behaviour changed over time. The means and standard deviations are presented in Table 6. There was a significant effect for time on the attention problems subscale (Wilks' lambda=0.724, F(2,19)= 3.613, p=0.047, partial eta squared= 0.276.). Firstborn children exhibited fewer attention problems following the arrival of their sibling.

Table 6

Mean CBCL group scores at Times 1,2 and 3.

	Time 1		Time 2		Time 3			
CBCL subscale	M	SD	M	SD	M	SD	F (2,19)	p
Aggressive Behaviou r	8.93	5.29	10.38	7.07	9.21	6.12	0.52	0.605
Anxious Depressed	1.59	1.86	2.29	1.93	1.57	1.62	0.79	0.468
Somatic	1.11	1.55	1.38	1.59	1.39	1.66	1.25	0.308
Withdrawal	0.89	1.45	1.43	1.78	1.28	1.64	3.21	0.063
Emotionally Reactive	1.56	1.71	1.76	1.51	1.71	1.90	0.74	0.490
Sleep Problems	2.48	3.17	2.67	2.94	3.29	2.71	0.07	0.936
Attention Problems	2.33	1.77	2.19	1.99	1.72	1.75	3.61	0.047
Other Problems	6.74	4.19	6.67	5.62	7.79	5.75	1.60	0.229
Total Score	25.63	15.97	28.76	18.19	28.00	16.92	0.63	0.546

In order to assess the association between security of attachment and indices of behavioural problems on the CBCL, correlations were conducted between attachment security and the absolute differences in CBCL scores between Time 1 and 3. There was no relationship between the differences in aggression, emotional reactivity and attention seeking in child behaviour checklist scores for firstborn children and attachment security (Table 7).

Table 7

Correlations between attachment security ratings and CBCL syndrome group difference scores between Time 1 and Time 3

CBCL Scale Change	Pearson's r	p
Aggressive Behaviour	-0.05	0.822
Anxious Depressed	0.30	0.136
Somatic Complaints	0.01	0.955
Withdrawal	-0.33	0.094
Emotionally Reactive	0.05	0.792
Attention Problems	0.02	0.931
Other Problems	-0.16	0.445
Sleep Problems	0.32	-0.107
Total Scores	0.18	0.383

Follow up questionnaires

A number of correlations were completed to look at attachment security at Time 1 in relation to questionnaire measures administered at follow-up. The relationship was investigated between Attachment Security scores and the Infant Characteristics, Modified Maternal Interview, Maternal Appraisal and Child Behaviour Checklist questionnaires to see if there was any relationship (Table 8). There were no significant associations between mother-child attachment security ratings and

measures of infant temperament, the firstborn child's behaviour and sibling relationships at follow up.

Table 8

Correlations between attachment security ratings and Time 3 questionnaire scores

Questionnaire Measure	Pearson's r	p
Infant Characteristics Questionnaire	-0.04	0.835
Modified Maternal Interview of Sibling Relationships Positive	-0.11	0.580
Modified Maternal Interview of Sibling Relationships Negative	-0.10	0.612
Maternal Appraisal Questionnaire	-0.18	0.366
Child Behaviour Checklist Time Point 3 Total	-0.21	0.296

Further analysis however did show a relationship between the firstborn sibling's age at follow up and the maternal appraisal of the sibling relationship (r=.419, p=0.030). When the firstborn child was older the mother was more likely to report a positive impression of the child's reaction to their new sibling.

Discussion

The present study identified an association between security of attachment in the firstborn child and aspects of their relationship with their new sibling. When the firstborn child was not securely attached to their mother they were more likely to be hostile towards the infant when observed playing. Erikson, Sroufe & Egeland (1985) described how hostility fitted with the predicted pattern for anxious/avoidant insecurely attached children. Although not formally significant, the results also indicated a trend linking attachment security to caregiving in the sibling interaction. The association between attachment security and a warm and positive sibling relationship is consistent with Erikson, Sroufe and Egeland (1985); Sroufe and Fleeson, (1986) and Teti and Ablard (1989) who showed that attachment was associated with prosocial orientations, and firstborn child-mother attachment could lead to the initiation of caregiving in later relationships.

In addition more securely attached children were more likely to play alone when observing their mother direct her attention solely to their sibling. This is consistent with the results of Teti and Ablard (1989) and illustrated how attachment security decreased the sense of threat and need for attention when the child was not directly involved with the mother. These results appear consistent with the view that more securely attached firstborn children possess a better working model of relationships which led to them being less hostile and competitive towards their younger sibling (Brody, 1998).

Secure firstborn children were also less likely to distract their mother when her attention was focused on the younger child. However, this finding may be

undermined by the validity of the 'distract' item in the second observational task. Distract looked at "any behaviour, such as calling or physically placing oneself between mother and child, that served to distract the mother's attention." The description detailed a negative attention seeking behaviour. In reality the nature of the distraction took many different guises. On occasion it could be attention seeking and indicative of jealousy and a negative sibling relationship. However, at other times the older child getting involved with mother and sibling was in an affectionate manner and their shared play was indicative of positive relationships. In that sense 'distract' could reflect secure children's positive expectations about maternal availability.

In retrospect this ambiguity could have been addressed by differentiating between the different kinds of involvement between older sibling and mothers. Dunn and Kendrick (1980) found that when mothers were occupied with the second child there was often an increase in positive involvement between the mother and the firstborn child so a high level on the 'distract' item may link to attachment security because the interaction was more affectionate and positive than attention seeking.

Although security of attachment was not linked to behavioural changes in the firstborn child in the transition to siblinghood, attention problems decreased for firstborn children following the arrival of a new family member. This indicates that the firstborn child was better able to carry out directions, concentrate and sit still following birth of their sibling. The result was unrelated to the developmental age of the firstborn child but was consistent with other findings such as the sibling being content to play alone when not given maternal attention.

Shaw and Vondra (1995) described studies showing how infant attachment security could predict a better attention span although this was not found to be the case in this study. The fact that attention problems decreased is surprising considering previous research indicating a likelihood of increased behavioural problems in this period (Dunn & Kendrick, 1980; Jacobs & Moss, 1976). Perhaps the arrival of a sibling created more opportunities for communication and interaction leading to less urgency in demanding maternal attention. As mentioned previously an increase in positive involvement between the mother and firstborn child may again have played a role in this outcome (Dunn & Kendrick, 1980). Furthermore, the modest sample size in this study, coupled with likely heterogeneity in the extent of increases in behavioural problems in this group, may have weakened power to detect change.

Consistent with previous research (Teti et. al., 1996), certain results in the study were affected by the firstborn child's age. Older children were more likely to interact and compete for their mother's attention in episode 1 and 2. The study observed attachment and the sibling relationship at an earlier stage to other studies, which meant that the siblings spent quite a considerable time not interacting. The firstborn child often had little interest in playing with the younger child and both could be quite passive and unable to initiate play. It is possible that interaction was not indicative of a sibling relationship but instead representative of the siblings' developmental stages with older children more responsive to instructions to play with their sibling.

Age was also a factor in mothers' impression of the firstborn child's adaptation to being a sibling. Older siblings adapted better in the transition to siblinghood. This

contradicts the findings of Teti et al., (1996) who described how older children had a more negative reaction to the birth of a sibling. Possibly as the child gets older they possess more emotional and cognitive resources to adapt to transitions and changes in their environment. Another possibility is that the questionnaire was biased towards older children, as their reactions were more overt and easier to observe. Passivity in the interaction between younger firstborn children and their sibling meant it was difficult to define adaptation to the transition. One of the challenges in designing the study was developing and adapting measures that could be sensitive to the reactions and adjustment of very young children.

Other factors such as child temperament, mother's psychiatric history, social support, gender and family composition had no impact on the sibling relationship. This is consistent with Teti and Ablard (1989) who found such variables did not have as much of an influence on attachment and sibling relationships as the parent child relationship.

While causality can not be determined by the results of this study, the longitudinal nature of the design is useful in identifying developmental pathways in the formation of the sibling relationship. The study took place in a naturalistic setting in the children's home. This provided ecological validity and looked at sibling interaction in the environment where it normally takes place. Being able to identify correlates of sibling relationship formation at such an early stage in the home environment, provides possibilities for the further study of interventions to improve adaptation in the transition to siblinghood.

The current findings, combined with those from other studies, indicate that attachment affects the development of a child's relationships from an early age beyond the parent-child relationship. Interventions aimed at promoting prosocial sibling relations may benefit from a focus on enhancing mother-child attachment security (Cohen et al., 1999; Kramer & Baron, 1995). If insecure attachment status meant that hostility and competitiveness was more likely, improving the attachment relationship could be a crucial preventative measure. Watch, Wait and Wonder psychotherapy (Cohen et al., 1999) is an infant led therapy involving infant mother interaction and reflections on the interaction. It is a treatment that may facilitate better sibling relationships by increasing attachment security and emotional regulation in the firstborn child. Relationship based approaches are seen as a significant aspect of any successful mental health prevention programme (Fonagy, 1998) with a strong sibling relationship providing social and emotional support across the lifespan (Brody, 1998; Dunn, 2000; Volling & Blandon, 2003).

The main limitation to the current study is the fact that the sample consisted mostly of low risk white, middle class participants. It can be seen in the results that the level of attachment security was even higher than those found in other middle class samples (Waters, 1995). This lack of range may limit the generalizability of the findings and may have contributed to the failure to find certain predicted associations.

Baydar, Hyle and Brooks (1997) have shown that samples including additional socio-economic risk factors experienced more changes in the transition to siblinghood. Belsky and Fearon (2002) also found that attachment security was

predictive of later difficulties in populations with more socio-emotional contextual risk factors, with results from middle-class samples often inconsistent (Shaw & Vondra, 1995). This, together with a sample of size of 29 continuing through to follow-up, was significantly smaller than previous studies researching similar concepts that used samples of 194 and 53 sibling dyads. (Teti & Ablard, 1989; Teti et al., 1996)

The nature of the observational tool also had its limitations. Two 10-minute episodes of sibling behaviour on one occasion was a small amount of time to observe an often changeable and subtle interaction. According to researchers such as J. Dunn (personal communication, November 28th, 2006) more reliability would be present if the observation occurred on more than one occasion and took a longer time period. Hostility, although significant, occurred in only 4% of behavioural intervals. Teti and Ablard (1989) did not do analyses on any behaviours occurring in less than 5% of intervals.

There was also a lack of consistency between self-report measures of the sibling relationship and the observation. This may be due to reporting biases (Baydar, Hyle & Brooks-Gunn 1997) in the self-report measure or the nature of the measures themselves, which had to be modified to be suitable for the ages of the children. Observational and standardised measures designed particularly for very young children may be beneficial in gaining further insight into early sibling relations. Also, the role of fathers in the transition may be important. The current study focused only on the mother-child relationship. Stewart et al., (1987) described how fathers

often got more involved with child-care after the birth of the second child so they may play a role in adjustment and the development of the sibling relationship.

The present study increases our understanding on how attachment theory contributes to sibling adjustment and the formation of the early sibling relationship. It has shown the importance of the mother-child relationship in a transitional period and how insecure attachment is associated with hostility and competitiveness in the later sibling interaction. It is important that the current research is replicated in a more high-risk population where the differences between secure and insecure attachment and link to positive and negative outcomes may be more pronounced.

References

Achenbach, T.M., & Edelbrock, C. (1983). *Manual for the child behavior checklist and revised child behavior profile.* Burlington, VT: Queen City Printers.

Achenbach, T.M., & Rescorla, L.A. (2000). *Manual for the ASEBA Preschool Forms and Form Profiles.* University of Vermont, Research Centre for Children, Youth and Families, Vermont.

Arend, R., Gove, F., & Sroufe, L.A. (1979). Continuity of individual adaptation from infancy to kindergarten: A predictive study of ego-resiliency and curiosity in preschoolers. *Child Development, 50,* 905-959

Ainsworth, M.D.S., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation.* Hillsdale, NJ: Erlabaum.

Bates, J.E., Bennett Freeland, C.A. & Lounsbury, M.L. (1979). Measurement of Infant Difficultness. *Child Development, 50,* 794-803.

Baydar, N., Hyle, P., & Brooks-Gunn, J. (1997). A longitudinal study of the effects of the birth of a sibling during the preschool and early grade school years. *Journal of Marriage and the Family, 59,* 957-965.

Belsky, J., & Fearon, P. (2002). Infant-mother attachment security, contextual risk and early development: A moderational analysis. *Development & Psychopathology, 14,* 293-310.

Belsky, J., & Pasco Fearon, R. M. (2002). Early attachment security, subsequent maternal sensitivity, and later child development: Does continuity in development depend upon continuity of caregiving? *Attachment and Human Development, 4,* 361-387.

Bowlby, J. (1977). The making and breaking of affectionate bonds. *British Journal of Psychiatry, 130,* 201-210.

Brody, G.H. (1998). Sibling relationship quality: Its causes and consequences. *Annual Review of Psychology, 49,* 1-24

Brody, G.H., Stoneman, Z & McKinnon (1986). Contributions of maternal child rearing practices and play contexts to sibling interactions. *Journal Applied Developmental Psychology, 7,* 225-236

Burhmester, D. & Furman, W. (1990). Perceptions of sibling relationships during middle childhood and adolescence. *Child Development, 61,* 1387-1398

Cassidy, J., & Shaver, P. (1999). *Handbook of attachment theory, research and clinical application.* London: Guilford Press.

Cohen, N.J., Muir, E., Lojkasek, M., Muir, R., Jane Parker, C., Barwick, M. & Brown, M. (1999). Watch, wait and wonder: testing the effectiveness of a new approach to mother-infant psychotherapy. *Infant Mental Health Journal, 20,* 429-451

Darling, N. & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin, 113,* 487-496

Dunn, J., & Kendrick, C. (1980). The arrival of a sibling: Changes in patterns of interaction between mother and firstborn child. *Journal of Child Psychology and Psychiatry, 21,* 119-132

Dunn, J. & Kendrick, C. (1982). *Siblings: love, envy, and understanding*. Cambridge, MA: Harvard University Press.

Dunn, J. & Munn, P. (1985). Becoming a family member: Family conflict and the development of social understanding in the second year. *Child development, 56,* 480-492

Dunn, J. (2000). State of the art: Siblings. *The Psychologist, 13,* 5

Erikson, M.F., Sroufe, L.A., & Egeland (1985). The relation between quality of attachment and behaviour problems in pre-school in a high-risk sample. In I. Bretherton, & E. Waters (Eds.) Growing points of attachment theory and Research. *Monographs for the Society for Research in Child Development, 50,* (1-2) 209, 147-166.

Fonagy, P. (1998). Prevention, the appropriate target of infant psychotherapy. *Infant Mental Health Journal, 19,* 124-150

Gottman, J.M. & Katz, L.F. (1989). Effects of marital discord on young children's peer interaction and health. *Developmental Psychology, 25,* 373-381

Hamilton, V. (2007). *An empirical study investigating the role of child-mother attachment security in predicting children's responses to the arrival of a sibling,* Unpublished thesis, University College London.

Henchie, V. (1963). *Children's reactions to the birth of a new baby.* Unpublished child development report, University of London Institute of Education.

Herrara, C.A & Dunn, J. (1997). Early experiences with family conflict: Implications for arguments with a close friend. *Developmental Psychology, 33,* 869-881

Hinde R.A. (1982). *Attachment: some conceptual and biological issues.* In the place of attachment in human behaviour (Parkes. C.M. & Stevenson-Hinde J., eds) NEW YORK: MCGRAW HILL.

Holden, G.W. & Edwards, L.A. (1989). Parental attitudes toward child rearing: instruments, issues, and implications. *Psychological bulletin, 106,* 29-58

Howe, N. & Ross, H.E. (1990). Socialization, perspective-taking, and the sibling relationship. *Developmental Psychology, 26,* 160-165

Howe, N. (1991). Sibling directed internal state language perspective taking and affective behaviour, *Child Development, 62,* 1503-1512

Jacobs, B.S., & Moss, H. A. (1976). Birth order and sex of sibling as determinants of mother-infant interaction. *Child development, 47,* 315-322

Kendrick, C., & Dunn, J. (1980). Caring for a second baby: Effects on interaction between mother and firstborn. *Developmental Psychology, 16, 4,* 303-311.

Kramer, L. & Baron, L.A. (1995). Parental perceptions of children's sibling relationships. *Family Relations, 44,* 95-103

Kramer, L. & Gottman, J.M. (1992). Becoming a sibling "with a little help from my friends." *Developmental psychology, 28 (4),* 685-699

Legg, C., Sherick, I., & Wadland, W. (1974). Reaction of preschool children to the birth of a sibling. *Child Psychiatry and Human Development 5,* 3-39.

Levy, D.M. (1934). Rivalry between children of the same family. *Child Study,* 11, 231-261

Maccoby, E.E. (1984). *Middle childhood in the context of the family.* In W.A. Collins (Ed.), Development during middle childhood. Washington, DC: National Academy Press

Mchale, S.M. & Crouter, A.C. (1996). The family contexts of children's sibling relationships. *Advances in Applied Developmental Psychology, 10,* 173-195

Mendelson, M.J., Aboud, F. E. & Lanthier, R.P. (1994). Kindergarten's relationships with siblings, peers & friends. *Merrill-Partner Quarterly 40 (3),* 416-435

Minuchin, P. (1985). Families and individual development: Provocations from the field of family therapy. *Child Development, 56,* 289-302.

Ramadhan, Z. (2007). *To what extent does parenting style predict behavioural changes in a first-born child following the birth of a sibling?* Unpublished thesis, University College London.

Reitman, P., Currier, R. & Stickle, T.R. (2002). A critical evaluation of the parenting stress index-short form (PSI-SF) in a head start population. *Journal of clinical child and adolescent psychiatry, 31,* 384-392

Sarason, I.G., Sarason, B.R., Shearin, E.N., & Pierce, G. R. (1987). A brief measure of social support: Practical and theoretical implications. *Journal of Social and Personality Research, 4,* 497-510.

Shaw, D.S., & Vondra, J.I. (1995). Infant attachment security and maternal predictors of early behaviour problems: a longitudinal study of low-income families. *Journal of Abnormal Child Psychology, 23,* 335-357

Sroufe, L.A. (1983) Infant-caregiver attachment and patterns of adaptation in preschool: The roots of maladjustment and competence. In: J. Cassidy & P.R. Shaver (Eds.) *Handbook of attachment theory, research and clinical applications.* New York: Guildford Press.

Sroufe, L.A., & Fleeson, J. (1986). Attachment and the construction of relationships. In W.W. Hartup & Z. Rubin (Eds.), *Relationships and development* (51-72). Hillsdale, NJ: Lawrence Erlbaum Associates.

Stewart, R.B, Marvin, R. (1984). Sibling relations: The role of conceptual perspective taking in the ontogeny of sibling caregiving. *Child development, 55,* 1322-1332

Stewart, R.B., Mobley, L.A., Van Tuyl, S.S., & Salvador, M.A. (1987). The firstborn's adjustment to the birth of a sibling. *Child Development, 58,* 341-355.

Stewart, R.B Jr (1990). *The second child: family transition and adjustment.* Newbury Park, CA: Sage

Stocker, C., Dunn, J. & Plomin R. (1989). Sibling relationships: links with child temperament, maternal behaviour, and family structure. *Child Development, 60,* 715-727

Teti, D.M. & Ablard, K.E. (1989). Security of attachment and infant-sibling relationships: A laboratory study. *Child development, 60,* 1519-1528

Teti, D.M., Sakin, W.S., Kucera, E., Corns, K.M., Das Eiden, R. (1996). And baby makes four: predictors of attachment security among preschool-age firstborns during the transition to siblinghood. *Child development, 67,* 579-596

Teti, D. (2002). *Retrospect and prospect in the psychological study of children.* NJ: Lawrence Erlbaum.

Thompson, R. A. (1999). *Early attachment and later development.* In J. Cassidy & P. R. Shaver (Eds.), Handbook of attachment: Theory, research, and clinical applications. 265-286. New York: Guildford press.

Vaughn, B., & Waters, E. (1990). Attachment behaviour at home and in the laboratory: Q Sort observations and Strange Situation classifications of one-year-olds. *Child Development, 61,* 1965-1973.

Volling, B.L. & Blandon, A.Y. (2003). Positive indicators of sibling relationship quality: psychometric analyses of the sibling inventory of behaviour (SIB). *Paper prepared for child trends' positive outcomes conference March 12-13*

Waters, E. & Deane, K.E. (1985). Defining and Assessing Individual Differences in Attachment Relationships: Q-Methodology and the Organization of Behavior in Infancy and Early Childhood. *Monographs of the Society for Research in Child Development, 50,* 41-65

Winnicott, D.W. (1964). *The child, the family and the outside world.* London: Penguin.

Part 3:Critical Appraisal

The critical appraisal details the process of conducting this piece of research with reference to the challenge of doing a follow-up study, and methodological issues such as sampling and designing measures specific to the participants. It concludes with a personal reflection on the experience of carrying out the research project.

Recruitment Issues

The project consisted of a follow-up to a study looking at parenting style and attachment in the transition to siblinghood. It was felt that with the participant group available it would be useful to extend the study to look at sibling relationships. Previous studies had looked at attachment and sibling relationships in older children but not the link between mother-firstborn child attachment status in the last trimester of pregnancy and the sibling relationship 5 months after the arrival of a new sibling. The longitudinal data could provide a wealth of information on the changing family dynamics in a transitional period.

The researchers in the initial study (Hamilton, 2007 & Ramadhan, 2007) had already recruited a significant number of participants. However, for participants to continue through to follow-up, there needed to be a large amount of liaison with the original researchers. They informed participants about the follow-up study, and through letters and telephone calls mothers were encouraged to take part. Rather than presenting the research project as another study, it was closely aligned with the Time 1 and Time 2 assessment to ensure continuity and facilitate recruitment.

The benefit of doing a follow-up was that many of the participants had already been recruited at Time 1. However, if a number dropped out before Time 3 and sample size was low, it was difficult to recruit more. The time period for the three data collection points spanned up to nine months. I initially contacted 6 more participants for Time 1 assessment but a number were giving birth too late to be considered as follow-up would be after the end of the study. Others expressed a wish not to take part. Only two more agreed to take part from Time 1 and completed the study to follow-up.

The dilemma when recruiting individuals prior to pregnancy was due to the changing circumstances of people's lives at that time. As a time of family transition it is often a source of stress to participants and pregnancy complications mean sensitivity is required when approaching recruitment. As a clinical professional this at times felt uncomfortable as I sensed that certain mothers were at quite a vulnerable time. Due to this stress and vulnerability it was inevitable that mothers who were less stressed and had more support were more likely to take part.

It was noticeable that the sample consisted primarily of white middle class mothers. The original researchers consisted of a middle class Asian woman and white working class British woman, while I was a white Irish man. While every effort was made to achieve an ethnically and socio-economically diverse sample this proved to be difficult.

The site of recruitment is one that impacted on the study. Ethical approval was gained to allow researchers to recruit from an antenatal clinic in a wealthy part of

London. A focus on more deprived areas and creative recruitment involving incentives for mother's participation as well as recruiting from outside health settings may have led to the involvement of mothers who do not usually participate in research. The challenge was to present the study in a non-threatening and non-judgmental manner with a large degree of trust involved in allowing someone to observe a child's behaviour in the home.

Previous research such as Belsky and Fearon (2002) and Baydar, Hyle and Brooks (1997) outlined the challenges in achieving significant results with middle class samples with higher levels of attachment security and less socio-emotional risk factors. It was important to be aware of the impact of the sample characteristics on the subsequent results of the study. If siblings from middle class backgrounds were more secure and less affected by family transition it would be harder to achieve significant and generalizable results. The fact that the study found significant correlations between attachment security and the sibling relationship provides a template for replication with a more diverse sample representative of the wider population.

Methodological Dilemmas

The main dilemma in carrying out the study was how to measure the sibling relationship when the siblings were at such a young age. The study was different to previous research in this regard and by focusing on younger children there was a paucity of instruments to measure the interaction. Questionnaire based and observational tools had to be modified to develop instruments suitable to yield

information from an interaction between a five-month-old infant and their 2-3 year old sibling.

Naturalistic Observation

An observational tool from Teti and Ablard (1989) provided a template for the naturalistic observation of the sibling interaction. However it recorded a two-way sibling interaction. Its benefit was that it had been used to look at the relationship between attachment and sibling relationships, however the research involved older children observed in a laboratory setting. The nature of the sibling relationship in the present study would inevitably be one-way with the infant unable to initiate any contact. This is consistent with their developmental level but presents obstacles to the notion of interaction. It is only the older child that could be considered, as their behaviour was more observable i.e. they reacted more in an interaction.

The decision to reduce the episodes of observation from seven to two was firstly because three of the episodes concerned the younger sibling's initiation of interaction, which was not relevant here. Also some of the episodes could not be reproduced in a home setting. Instead two main episodes seemed relevant to behaviour initiated by the older child and a judgement was made that this would be a good representation of the sibling relationship. The time period of the intervals was extended from 3 to 10 minutes to allow a significant period for behaviour to occur.

The reality of carrying out the naturalistic observation presented many difficulties. These became more apparent as the data collection progressed. On the first task the siblings were asked to play together. This was an episode from Teti and Ablard's

(1989) study. However both the ages of the children and the home setting affected the interaction. Firstly, in almost all cases the mother had to be with the siblings and guide the interaction. This could involve getting a toy for the older child to bring to the younger child or words of encouragement. The task therefore felt quite contrived and it was difficult to assess if the children's behaviour was a typical interaction. To help clarify this problem, mothers were asked if the 10-minute period was representative of the siblings' relationship.

The siblings spent quite a considerable time not interacting hence another coding category ('no interaction') had to be added to account for this occurrence. The older child often had less interest in playing with the younger child as they were quite passive and could not initiate play yet. Another coding category of the first task was the 'infant attachment behaviour' item i.e. "greet, approach, and embrace, directed by a distressed infant to provide comfort." The category was dropped as it was not coded on any occasion due to the young age of the infant sibling and the passivity of a child at that age limiting initiation of such behaviour.

The nature of the home environment had an influence on the observation. The older sibling could be distracted by a television or other stimuli, as the environment could not be controlled. The first observational task was also affected by the siblings' reaction to the arrival of the researcher. It was noticeable on a certain number of occasions that only nearing the end of the initial observational period did the older sibling relax and show more observable behaviour after an initial period of anxiety and shyness. In retrospect a longer period should have taken place between arrival in the home and the commencement of videotaping.

The second observational task involved the mother focusing all the attention on the younger sibling while the older sibling was told to play alone. Again this was taken from one of the episodes from the Teti and Ablard (1989) study. This task was easier to record and the older child usually exhibited a variety of reactions however the coding system devised by Teti and Ablard (1989) proved problematic. It was clear that 'aggress' and 'cry/protest' were behaviours that could be recorded. Also the category of 'sibling not involved' was added to account for significant periods when the older child would play by itself, which was again important to capture. However, the 'distract' item proved more difficult.

'Distract' looked at "any behaviour, such as calling or physically placing oneself between mother and child, that served to distract the mother's attention." It occurred in a large number of intervals but could involve both positive and negative behaviour, making the observation difficult. Although an association with this item and attachment security was found there were problems with the definition of 'distract' with this age group of children. Was it realistic to expect the child not to seek contact with the mother and if so, was this positive or negative and a reflection of the sibling relationship?

Sometimes mothers strayed from the instructions and called to the older child, getting them involved. This was a dilemma as the instructions had already been outlined to the mother that she was to play only with the younger sibling. The fact that many spontaneously called to the older child was part of the naturalistic observation but biased the coding when it was the mother's not the child's behaviour dictating interaction. These factors served to undermine the validity of the 'distract'

coding item. In retrospect more items should have been added to account for the different kinds of involvement between older sibling and mother's play with their brother/sister.

The second observational task probably provided a better representation of the sibling relationship. The task felt less contrived and more realistic than the first. The mother would be more preoccupied with the younger infant at 5 months of age and this was possibly a more representative context for the development of the sibling relationship. It was perhaps too early to expect it to be represented in the direct interaction between siblings away from the mother.

In spite of the limitations of ages and settings the observational task yielded some significant results particularly with regard to the link between insecure attachment and hostility and competitiveness between siblings. However, researchers like Judy Dunn (personal communication, 28th November 2006) recommended that such observational tasks should be longer and carried out in the family home on more than one occasion to provide a more realistic, reliable measure of sibling relationships while Laurie Kramer recommended more coding categories (personal communication, 19th November 2006)

Questionnaire Measures

The selection of a suitable self-report questionnaire presented the same difficulties as the observational task i.e. (1) a paucity of measures and (2) measures not suited to the young age of siblings in the study. The Maternal Interview of sibling relationships (Stocker, Dunn & Plomin, 1989) assessed very young children's sibling

relationships in the toddler and preschool years and was selected for use in this study. However, it again was unsuitable for a 5 months old and 2-3 year old child. All the questions considered a two-way interaction between children and had to be changed to consider only the older child's role in the interaction. Many of the questionnaire items were not suitable and had to be dropped so it emerged quite different to the one devised by Stocker, Dunn and Plomin (1989).

This was not ideal as it would have been preferable to use a questionnaire already widely administered if possible. Like any self-report instrument the concern was bias in the self-reporting of sibling's behaviour. There often seemed to be quite a difference between scores from the observational tasks and questionnaire, which meant that the different tools did not have great validity. Some further work on both observational and self-report measures with this age group may provide more valuable and generalisable data for such young children.

Other family members

The study initially set out to recruit only families with one older sibling and mothers in the last trimester of pregnancy with another child. However, this was not always possible. Four of the families had three children. In reality, on visiting the homes this did not affect the sibling relationship, as the other child usually wasn't present and the results showed that no difference existed between 2 and 3 child families.

The role of fathers is one that again has been neglected in this study due to logistical restrictions. On a couple of observations, the father was actually present with the mother when the siblings interacted. Their impact has been shown in previous

research and fathers in the study were sometimes working from home so could have had a significant influence on the sibling relationship. I was often asked why fathers weren't considered. From reading the literature, many studies looking at parenting and child development consider only the maternal role in parenting and not the entire family system. This problem has again been perpetuated in the present study.

Design

It is clear that studying sibling relationships with this age group is possible but a number of modifications may need to be made to achieve more reliable data collection. The developmental psychopathology model details the fact that numerous variables are involved in child behaviour and that these can change with time. In order to get a more specific impression of the impact of attachment on sibling relationships the design needs to be more controlled. This may involve a specific task e.g. a developmentally appropriate game, to ensure all sibling dyads had the opportunity to interact in a similar manner. Initially I brought toys to the observations but the novelty of these items actually distracted the older child, so they were encouraged to play with the sibling using their own toys. However, the wide range of activities and toys used to facilitate sibling interaction meant that different activities would lead to different coding categories e.g. changing a nappy inevitably involved more caregiving than playing with a toy. Also the age of the firstborn child may need to be more closely matched as it was shown to have an effect on the level of sibling interaction. This together with standardized measures applicable to the age group concerned may ensure more reliability.

Alternatively, a qualitative procedure may yield useful data with this population. Anecdotal evidence from visiting the many participants provided some interesting insights into the mother, child and sibling relationship. Parents would often be helpful with their insights into the behaviour of their children. Mothers talked of the changing reactions of their child over time to their sibling, and of behaviours which were not measured by the standardized measures, such as their child behaving in a more babyish manner through speech and play on the arrival of their sibling. One could also draw on psychoanalytic theory and the nature of counter transference to provide information on the family dynamic e.g. the process involved in the home visit and reaction of mother and child to the researcher.

At Time 1 the Attachment Q sort had more flexibility in taking into account a wide variety of circumstances. However, the follow-up measures often missed out on some important environmental information such as how the child reacted to the arrival of the researcher. For example, on one occasion the firstborn child hid from the researcher for a sustained period and refused to be observed. Such a behaviour would not be accounted for in the observational measures but may have something to say about the child's behaviour and adaptation to becoming a sibling.

Personal reflection

As a trainee clinical psychologist, conducting a piece of research presents many challenges and contrasts to those when doing clinical work. This study offered a fascinating insight into the sibling relationships of 29 different families and was an enjoyable and rewarding experience. However the aim was very different to clinical intervention. As a clinician, one would offer behavioural techniques to help the

parent if observing difficult behaviour between siblings and would always aim to decrease distress. As a researcher the primary concern was to be an objective observer and collect data on the sibling relationship. This could be frustrating at times, especially when observing hostility in the sibling relationship.

I observed a spectrum of interactions from the siblings studied. At the beginning I viewed possessiveness and jealousy with regard to toys, as a negative reflection of the older child. However, as data collection progressed it was evident that this behaviour was more normative. This was an important lesson and again links to the developmental psychopathology approach with regard to the child's development. Behaviours that at first seemed inappropriate seemed more appropriate when one considered the relevance to the child's developmental stage. This may be a valid point with regard to sibling relationships and whether even hostility and competitiveness is indicative of an abnormal interaction.

Another aspect of the research was its inherent unpredictability. In spite of designing observational and standardized measures there is always a risk to conducting a piece of work in the home environment. Often the results could be affected by events that happened that day. On some occasions families had just arrived in from a day trip and the siblings were clearly tired, on others one of the siblings was ill. Collecting observational data on more than one occasion would have greatly increased reliability. In spite of the unpredictability, it was satisfying to conduct the study in a naturalized setting as it gave more of an insight into day-to-day family functioning.

Conclusion

The research project as a whole involved challenges in recruitment and in the design of observational and standardized measures suitable for studying relationships in young children. The study contributed to the field by finding an association between attachment security in the older child and aspects of the sibling relationship following the transition to siblinghood. This has implications for the design of preventative interventions, which could minimize the distress involved in family transition and facilitate positive sibling relationships.

References

Baydar, N., Hyle, P., & Brooks-Gunn, J. (1997). A longitudinal study of the effects of the birth of a sibling during the preschool and early grade school years. *Journal of Marriage and the Family, 59,* 957-965.

Belsky, J., & Fearon, P. (2002). Infant-mother attachment security, contextual risk and early development: A moderational analysis. *Development & Psychopathology, 14,* 293-310.

Belsky, J., & Pasco Fearon, R. M. (2002). Early attachment security, subsequent maternal sensitivity, and later child development: Does continuity in development depend upon continuity of caregiving? *Attachment and Human Development, 4,* 361-387.

Hamilton, V. (2007). *An empirical study investigating the role of child-mother attachment security in predicting children's responses to the arrival of a sibling,* Unpublished thesis, University College London.

Ramadhan, Z. (2007). *To what extent does parenting style predict behavioural changes in a first-born child following the birth of a sibling?* Unpublished thesis, University College London.

Stocker, C., Dunn, J. & Plomin R. (1989). Sibling relationships: links with child temperament, maternal behaviour, and family structure. *Child Development, 60,* 715-727

Teti, D.M. & Ablard, K.E. (1989). Security of attachment and infant-sibling relationships: A laboratory study. *Child development, 60,* 1519-1528

Appendix 1: Information sheet for participants

SUB-DEPARTMENT OF CLINICAL HEALTH PSYCHOLOGY
UCL PSYCHOLOGY

INVESTIGATION INTO THE EFFECTS OF THE ARRIVAL OF A NEW BABY ON FIRST BORN CHILDREN

FORM VERSION: 2.0 1ST MARCH 2007

INFORMATION SHEET

This information sheet outlines a study that researchers at University College London are carrying out, which you might be able to take part in.

What is the study about?
The birth of a baby is an important event in family life. We are interested in how older siblings respond to the arrival of a new child in the family **and how they behave with their new sibling.** We are carrying out this study to help us understand how parents help children adapt to having a new sibling. We are interested in how different styles of parenting might contribute to children's responses to the birth of a child. We are also interested in how different styles of relationship between parent and child might contribute to this as well. Finally, we are interested in hearing about what parents think about how their child will adapt to the new baby and what things parents might be doing to get a child ready for the birth.

Why is this study being conducted?
We hope that this study will provide important information for both parents and professionals working with children and families. In particular, we hope the study will improve our understanding of the kinds of things that might help children adapt to the changes that take place when a new baby is born.

Why am I being asked to take part?
We are approaching all mothers in this service who have a child between 18 months and 2 and a half years old who are pregnant with another child.

What does the study involve?
The study will involve **two visits** to your home and one telephone call. During the **first** visit to your home **(in the last three months of your pregnancy)** researchers will video-tape interactions between you and your child as you go about your everyday routines. When your new baby is around a month old, we would contact you by telephone to complete a questionnaire to see how your child's behaviour has changed since we last saw you. This telephone call would take about 15 to 20 minutes. **The second visit to your home takes place 5 months after the birth of the new child and researchers will video-tape a series of brief parent-child and sibling interactions.** All videotape information will remain strictly confidential.

During **both visits** you will also be asked to fill out a brief questionnaire **and answer some questions about your child's adaptation to the new sibling.** Each visit will take about an hour and will be organised at a time to suit you.

If I want to take part, what do needs to happen?
If you agree to take part, one of the researchers whose details appear below will contact you and arrange to see you at a time that is convenient to you. Alternatively, you may contact the researcher yourself directly (our details are given below).

What if I want to drop out of the study?
If at any time you decide you do not want to take part in the study you are free to do so, and you do not have to give a reason. Leaving the study will not affect your treatment by any service in any way whatsoever.

What happens to the information I provide?
All the information you give us, including videotapes and questionnaires, will be stored anonymously and securely. The information will be treated in the strictest confidence and will not be passed on to anyone outside our research team.

Your midwife will ask you if you would like to volunteer to take part in the study and if you agree they will then pass your details to one of the researchers. Alternatively, you can contact one of them directly (for either more details or to volunteer).

If you are interested in taking part in this study or you have any questions about it please contact:

Zeyana Ramadhan
Victoria Hamilton

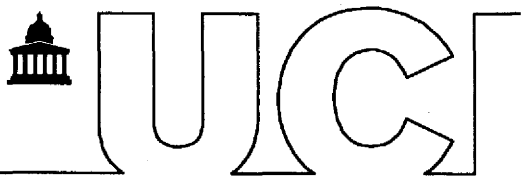
Ronan Burke

You do not have to take part in this study if you do not want to. If you decide to take part you may withdraw at any time without having to give a reason.

All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This proposal was reviewed by the Charing Cross NHS Ethics Committee.

Appendix 2: Letter to participants

SUB-DEPARTMENT OF CLINICAL HEALTH PSYCHOLOGY
UCL PSYCHOLOGY



Sub-Department of
Clinical Health
Psychology

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20th August 2007

Dear ***,

My name is Ronan Burke and I am a Clinical Psychology Trainee with University College London. I am also a member of the research team for the project ***Investigation into the effects of the arrival of a new baby on first-born children.*** You may remember being visited by either Victoria Hamilton or Zeyana Ramadhan some months back for the initial part of the study. We would like to thank you again for your participation.

Due to the initial response, the study has been extended to include another brief home visit. This would involve looking at the interaction between the siblings around 5 months after the birth of the new baby. We are interested in how older siblings respond to the arrival of a new child in the family and how they behave with their new sibling.

This would involve a visit to video-tape a period of brief parent-child and sibling interactions. All videotape information will remain strictly confidential. During the visit you will also be asked to fill out a brief questionnaire about your child's adaptation to the new sibling. Each visit will take about 30-40 minutes and will be organised at a time to suit you. All the information you give us, including videotapes and questionnaires, will be stored anonymously and securely. The information will be treated in the strictest confidence and will not be passed on to anyone outside our research team.

I will be calling you over the next few weeks to see if you would be willing to participate and if so, to arrange a time suitable for you. Thanks again for your help and you can contact me on if you have any questions.

Yours sincerely,

Ronan Burke
Trainee Clinical Psychologist

Appendix 3: Consent Form

SUB-DEPARTMENT OF CLINICAL HEALTH PSYCHOLOGY
UCL PSYCHOLOGY

Centre Number:
Patient Identification Number for this study:

UCLH Project ID number:
Form version: 2.0 1st March 2007.

CONSENT FORM

Title of project: **INVESTIGATION INTO EFFECTS OF THE ARRIVAL OF A NEW BABY ON FIRST BORN CHILDREN**

Name of Principal investigators : Zeyana Ramadhan, Victoria Hamilton & Ronan Burke

Please initial box

1. I confirm that I have read and understood the information sheet (version 1.0 6th July 2006) for the above study and have had the opportunity to ask questions. ☐

2. I confirm that I have had sufficient time to consider whether or not want to be included in the study ☐

3. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected. ☐

4. I understand that sections of any of my medical notes may be looked at by responsible individuals from (company name) or from regulatory authorities where it is relevant to my taking part in research. I give permission for these individuals to have access to my records. ☐

5. I agree for both a parent-child and sibling interaction session to be video-taped. I understand that the video will be strictly confidential and my identity will not be revealed to other parties. ☐

6. I agree to take part in the above study. ☐

Sub-department of clinical health psychology
UCL PSYCHOLOGY

Centre Number: UCLH Project number:
Patient Identification Number for this study: **Form version: 2.0 1st March 2007.**

CONSENT FORM

Title of project: **INVESTIGATION INTO EFFECTS OF THE ARRIVAL OF A NEW BABY ON FIRST BORN CHILDREN**

Name of Principal investigators : Zeyana Ramadhan, Victoria Hamilton & Ronan Burke

Name of patient	Date	Signature

Name of Person taking consent	Date	Signature

Researcher (to be contacted if there are any problems)	Email/phone number

Comments or concerns during the study

If you have any comments or concerns you may discuss these with the investigator. If you wish to go further and complain about any aspect of the way you have been approached or treated during the course of the study, you should write or get in touch with the Complaints Manager, UCL hospitals.

1 form for Patient;
1 to be kept as part of the study documentation.

Appendix 4: Ethical Approval letter

NHS

Charing Cross Research Ethics Committee

Miss Zeyana Ramadhan
Trainee Clinical Psychologist
Sub-Department of Clinical Psychology

21 March 2007

Dear Miss Ramadhan

Study title:	**Do parenting and attachment styles prior to the birth of a sibling predict behavioural changes of the first-born child following the birth of a sibling.**
REC reference:	**06/Q0411/119**
Amendment number:	**1**
Amendment date:	**01 March 2007**

The above amendment was reviewed at the meeting of the Committee held on 19 March 2007.

Ethical opinion

The general consensus was that the design of the study will be improved by this amendment, and that the addition of the follow up observation does not pose any further ethical issues. The members of the Committee present gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Protocol	2.0	
Participant Information Sheet	2.0	01 March 2007
Participant Consent Form	2.0	01 March 2007
Notice of Substantial Amendment (non-CTIMPs)		01 March 2007
Covering Letter		01 March 2007

Membership of the Committee

The members of the Committee who were present at the meeting are listed on the attached sheet.

R&D approval

All investigators and research collaborators in the NHS should notify the R&D office for the relevant NHS care organisation of this amendment and check whether it affects R&D approval of the research.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

06/Q0411/119:	**Please quote this number on all correspondence**

Yours sincerely

Committee Co-ordinator

E-mail:

Enclosures List of names and professions of members who were present at the meeting and those who submitted written comments

Copy to: *UCL Biomedicine Unit*

Charing Cross Research Ethics Committee

Attendance at Committee meeting on 19 March 2007

Name	*Profession*	*Capacity*
	Consultant Physician	Expert
	NHS trainee manager	Lay
	Lay Member	Lay
	Anthropologist Nurse	Expert
	General Practitioner	Expert
	Scientist	Lay
	Pharmacist	Expert
	Consultant Paediatrician	Expert
	Psychiatrist	Expert
	Lay Member	Lay
	Consultant Neuroradiologist	Expert

Also in attendance:

Name	*Position (or reason for attending)*
	Committee Coordinator

Appendix 5: Joint working

This project was conducted as a follow-up study to UCL theses conducted by Victoria Hamilton and Zeyana Ramadhan in 2007. They had initially recruited the majority of participants and carried out the Time 1 and Time 2 assessments in the study. I facilitated their Time 1 recruitment by spending 5 mornings in the antenatal clinic in Chelsea and Westminster hospital to ensure sufficient numbers. My main role was to contact and recruit participants for Time 3 assessment and to conduct another home visit, which involved observation of the sibling relationship and administration of standardised questionnaires.

Appendix 6: Coding instructions for observation of sibling relationship

CODING

The observation of the sibling relationship uses two **10 minute episodes** of family interaction. The coding system is interval sampling i.e. every **30 seconds** code the behaviour seen, on the coding sheet.

FIRST EPISODE

Involves sibling play in the mother's absence and looking at the nature of the sibling relationship.

(1) ***Caregiving*** – older sibling to younger sibling including verbal assurances, holding kissing, caressing infant to provide comfort, attempts to calm infant by redirecting attention

(2) ***Infant attachment behaviours*** – Greet, approach, embrace, directed by a distressed infant to provide comfort

(3) ***Affiliative social interaction*** – non distressed social bids to each other, any neutral behaviour involving the two siblings

(4) ***Hostility*** – hostile behaviour directed from the older child to the infant e.g. hitting, mocking

(5) ***Distress*** – fussing, crying by the older child

(6) ***No Interaction*** – there is no interaction, contact between siblings

CODING 1st EPISODE

Sibling play with mothers guidance

	Caregiving	Infant attachment Behaviour	Affiliative Social Interaction	Hostility	Distress	No Interaction
1. 30secs						
2. 60secs						
3. 90secs						
4. 120secs						
5. 150secs						
6. 180secs						
7. 210secs						
8. 240secs						
9. 270secs						
10. 300secs						
11. 330secs						
12. 360secs						
13. 390secs						
14. 420secs						
15. 450secs						
16. 480secs						
17. 510secs						
18. 540secs						
19. 570secs						
20. 600secs						
TOTAL						

SECOND EPISODE

The mother is asked to play with the infant while directing the older child to play alone. The task elicits feelings of rivalry between children.

Behaviours coded are:

(1) ***Cry/Protest*** – fussing, crying

(2) ***Distract*** – any behaviour, such as calling or physically placing oneself between mother and child, that served to distract the mother's attention

(3) ***Aggress toward sibling and aggress toward mother*** –hostile behaviours directed toward the child with whom the mother is playing or toward the mother herself (e.g. striking, yanking).

(4) ***Sibling not involved*** – the older child keep themselves occupied or plays alone and is not interested or involved with mother playing with infant.

CODING 2nd EPISODE

Inactive older sibling watching mother play with sibling

	Cry/Protest	Distract	Agress towards sibling/mother	Sibling not involved
1. 30secs				
2. 60secs				
3. 90secs				
4. 120secs				
5. 150secs				
6. 180secs				
7. 210secs				
8. 240secs				
9. 270secs				
10. 300secs				
11. 330secs				
12. 360secs				
13. 390secs				
14. 420secs				
15. 450secs				
16. 480secs				
17. 510secs				
18. 540secs				
19. 570secs				
20. 600secs				
TOTAL				